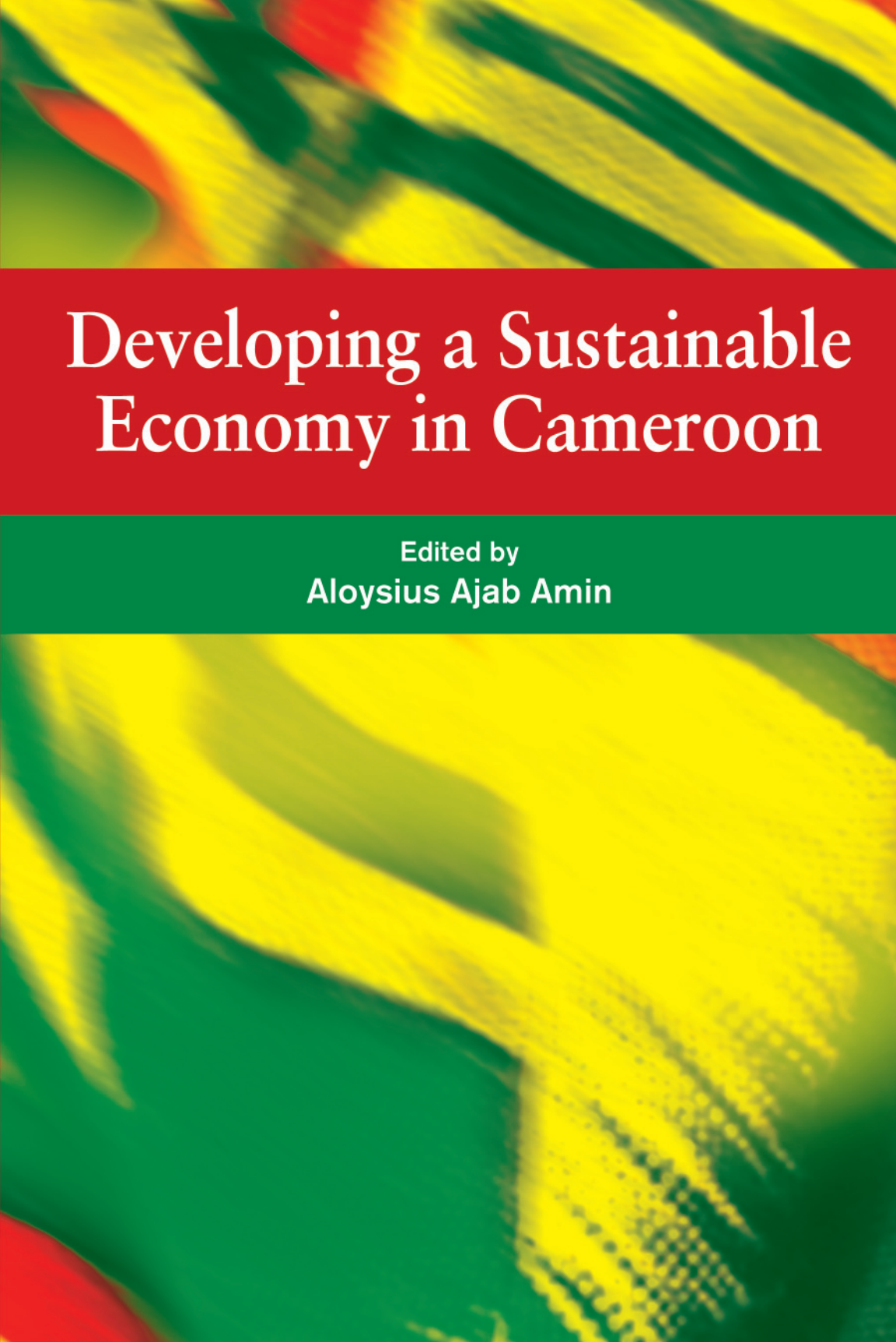




Developing a Sustainable Economy in Cameroon

Edited by
Aloysius Ajab Amin

VISIT...

LANZAROTE
Caliente.COM

Developing a Sustainable Economy in Cameroon

DEVELOPING A SUSTAINABLE ECONOMY IN CAMEROON

Edited by
Aloysius Ajab Amin



Council for the Development of Social Science Research in Africa

© Council for the Development of Social Science Research in Africa, 2008
Avenue Cheikh Anta Diop Angle Canal IV, B.P. 3304 Dakar, 18524, Senegal
<http://www.codesria.org>

All rights reserved

ISBN: 2-86978-209-8
ISBN 13: 9782869782099

Typeset by Sériane Camara Ajavon
Cover image designed by Ibrahima Fofana
Printed by Imprimerie Graphiplus, Dakar, Senegal

The Council for the Development of Social Science Research in Africa (CODESRIA) is an independent organisation whose principal objectives are facilitating research, promoting research-based publishing and creating multiple forums geared towards the exchange of views and information among African researchers. It challenges the fragmentation of research through the creation of thematic research networks that cut across linguistic and regional boundaries.

CODESRIA publishes a quarterly journal, *Africa Development*, the longest standing Africa-based social science journal; *Afrika Zamani*, a journal of history; the *African Sociological Review*; *African Journal of International Affairs* (AJIA); *Africa Review of Books*; and the *Journal of Higher Education in Africa*. It copublishes the *Africa Media Review* and *Identity, Culture and Politics: An Afro-Asian Dialogue*. Research results and other activities of the institution are disseminated through 'Working Papers', 'Monograph Series', 'CODESRIA Book Series', and the *CODESRIA Bulletin*.

CODESRIA would like to express its gratitude to the Swedish International Development Cooperation Agency (SIDA/SAREC), the International Development Research Centre (IDRC), Ford Foundation, MacArthur Foundation, Carnegie Corporation, NORAD, the Danish Agency for International Development (DANIDA), the French Ministry of Cooperation, the United Nations Development Programme (UNDP), the Netherlands Ministry of Foreign Affairs, Rockefeller Foundation, FINIDA, CIDA, IIEP/ADEA, OECD, OXFAM America, UNICEF and the Government of Senegal for supporting its research, training and publication programmes.

Contents

List of Tables	vii
List of Illustrations/Figures	xii
Foreword	xiii
Preface	xiv
Acknowledgements	xvi
Contributors	xvii

I: Introduction

1	Introduction: Conceptual Issues and Overview	1
	<i>Aloysius Ajab Amin</i>	

II: Production Issues

2	Agricultural Export Supply Determinants in Cameroon's Economy	29
	<i>Sunday Khan and Daniel Gbetnkom</i>	
3	Analysis of Cameroon's Non-traditional Exports Market Access Potential	49
	<i>Lydie Tankona Bamou and Ernest Bamou</i>	
4	Cotton Supply Response in Cameroon	64
	<i>Emmanuel Donya</i>	
5	Cameroon's Economy and Reforms	79
	<i>Aloysius Ajab Amin</i>	
6	Sources of Economic Growth in Cameroon's Economy	103
	<i>Aloysius Ajab Amin</i>	
7	The Effects of Trade Reform on Cameroon's Manufacturing Industries	125
	<i>Ousmanou Njikam</i>	

III: Social Issues

8	Cameroon's Poverty Profile in 1996	157
	<i>Aloysius Ajab Amin, Francis Menjo Baye, Samuel Fambon, Isidor Noumba, Isaac Tamba and Regina Tawab</i>	

9	The Determinants of Poverty in Cameroon	187
	<i>Bernadette Dia Kamgnia and Joseph-Pierre Timnou</i>	
10	An Analysis of Household Attitudes toward the Purchase of Livestock Products and Fish in Cameroon.....	201
	<i>Emmanuel N. Tambi</i>	
11	Economic Analysis of Private Returns to Investment in Education in Cameroon	219
	<i>Aloysius Ajab Amin and Wilfred J. Awung</i>	
12	Internal Efficiency of Secondary School in Cameroon: Institutional Concern	235
	<i>Isidor Noumba</i>	
13	Public Provision of Health Care in Cameroon: Policy Choices and Options	259
	<i>Ntembe Augustine Ntembe</i>	

IV: Financial and Fiscal Issues

14	Financial Sector Reforms in Cameroon	283
	<i>Regina Tawah, Rebecca Ntongho M. Amin and Vinatius Bweb Ewane</i>	
15	Determinants of the Level of Taxation in Cameroon	306
	<i>Dorothy Nkogko Agbor</i>	
16	Real Exchange Rate Misalignment in Cameroon, 1970–1996	328
	<i>Francis Menjo Baye and Sunday A. Khan</i>	
17	Public Debt and Public Investment in Cameroon	346
	<i>George N. Mbanga and Fondo Sikod</i>	
18	Fiscal Policy Coordination and Economic Performance: Cameroon Case Analysis with a CGE Model	361
	<i>Ernest Bamou</i>	
19	The Informal Economy and Tax Revenue of Cameroon's Economy	380
	<i>Aloysius Ajab Amin and Alexander Mbeaob</i>	

V: Conclusion

20	Conclusion: Implication for Economic Development	401
	<i>Aloysius Ajab Amin</i>	

List of Tables

Table 1.1: Evolution of Capital and Output (GDP), Cameroon, 1960-2003 (market prices in billion francs CFA)	11
Table 2.1 Unit Root Tests Statistics	41
Table 2.2: Results of Co-integration Tests	42
Table 2.3: Export Supply Functions of the Different Crops (quantity exported as the dependent variable)	43
Table 3.1: Classification of Cameroon's 1996/97 Non-oil, Non-traditional Exports According to their Competitiveness and Financial Profitability	53
Table 3.2: Duties and Taxes Paid on Cameroon's Exports in 1996/97	58
Table 4.1: Sampling Structure	71
Table 4.2: Regression Results for the Aggregate Model (t-statistics in parentheses)	72
Table 4.3: Regression Results for the Sub-sample Models (T-statistics in parenthesis)	73
Table 4A.1: Change in GDP by Activity Groups in Cameroon (billions of CFA francs)	77
Table 4A.2: Change in Main Export Crops (thousands of tonnes) and Their Prices (CFA francs/kg)	77
Table 4A.3: Correlation Matrix of Estimated Coefficients	77
Table 4A.4: Statistical Description of Variables	78
Table 4A.5: Specific Effects for the Aggregate Model	78
Table 5.1: Public Expenditure and Revenue as a Percentage of GDP (1979/80-1998/99)	80
Table 5.2: Public Service Employment	82
Table 5.3a: Production: Cocoa, Cotton and Coffee (Metric Tonnes)	86
Table 5.3b: Production: Other Products (Metric Tonnes)	87
Table 5.3c: Timber Production By Volume (M3)	88
Table 5.3d: Petroleum Production and Export ('000 tonnes)	88
Table 5.3e: Producer Prices: Cocoa, Cotton and Coffee (CFA francs)	89
Table 5.4: Cameroon: Balance of Trade	98
Table 6.1 Factor and Total Factor Productivity Contribution to Economic Growth in Cameroon	119
Table 7.1 Protection of Cameroonian Manufacturing Industries	126

Table 7.2 Cameroon: Cross-industry Rank Correlation Between Levels and Changes in Trade Exposure Measures	136
Table 7.3: Pre (1)- and Post (2)- Trade Reform Technical Change, Pure Technical Change and Non-neutral Technical Change of Cameroonian Manufacturing Industries	139
Table 7.4: Pre (1)- and Post (2)- trade Reform Summary Statistics of Firm-specific Technical Efficiencies (%)	141
Table 7.5: Frequency Distribution of Pre(1)- and Post(2)- Trade Reform Technical Efficiency of Cameroonian Manufacturing, Sample Firms	142
Table 7.6 Cross-industry Pearson and Spearman Rank Correlation Indicators of Foreign Competition with Pre- and Post-Reform Performance Measures	143
Table 7A.1: Summary Statistics of Pre(1)- and Post(2)-trade Reform of the Data Set	149
Table 7A2: The Pre(1)- and Post(2)- Trade Reform MLE of the Translog Production Function for Cameroon Manufacturing Industries	150
Table 7A.3: Pre(1)- and Post(2)- Trade Reform Production Elasticity for Cameroon Manufacturing Industries	152
Table 7A4: Pre(1)- and Post(2)- Trade Reform Firm-Specific Technical Efficiency (%) for Cameroon Manufacturing Industries	153
Table 8.1: Structure of Poverty by Area in 1996 (lower national poverty line BNC, ZL = 378,25 CFAF of total expenditures per adult-equivalent per day)	163
Table 8.2: Structure of Poverty by Zones in 1996 (upper national poverty line ZU = 583,87 CFAF of total expenditures per adult-equivalent per day)	163
Table 8.3: Structure of Poverty According to Strata in 1996 (national lower poverty line, BNC; ZL = 373,26 CFAF of total expenditures per adult-equivalent per day)	166
Table 8.4: Structure of Poverty by Strata in 1996 (national upper poverty line BNC; ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)	166
Table 8.5: Decomposition of Poverty According to Age Group of Household Head (ZL = 373.26 as total expenditures per adult-equivalent per day)	168
Table 8.6: Decomposition of Poverty According to Age Group of Head of the Household (ZU = 533.87 CFAF as total expenditures per adult-equivalent per day)	168
Table 8.7: Gender of Household Head (ZL = 373.26 CFAF as total expenditures per adult-equivalent per day)	169
Table 8.8: Poverty and Gender of Household Head (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)	170
Table 8.9: Decomposition of Poverty According to Household Type (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)	171

Table 8.10: Decomposition of Poverty by Household Type (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)	171
Table 8.11: Decomposition of the FGT Index According to Number of Persons in a Household (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)	172
Table 8.12: Decomposition of the FGT Index According to Number of Persons in a Household (ZU = 533,82 CFAF of total expenditures per adult-equivalent per day)	173
Table 8.13: Number of Children per Household, by Region and According to Standard of Living	173
Table 8.14: Decomposition of Food Poverty According to the Main Occupation of Household Head in the Last 12 Months (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)	174
Table 8.15: Decomposition of Food Poverty According to Occupation of Household Head in the Last 12 Months (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)	175
Table 8.16: Sector of Activity and Poverty (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)	176
Table 8.17: Sector of Activity and Poverty (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)	176
Table 8.18: Average Expenditures on Education by Region and According to Standard of Living per Adult-equivalent (in CFAF)	177
Table 8.19: Decomposition of Food Poverty According to Level of Education (ZL = 373.26 CFAF)	178
Table 8.20: Decomposition of Food (Nutritional) Poverty According to Level of Education (ZU = 533.87 CFAF)	178
Table 8.21: Type of Health Centres Visited	179
Table 8.22: Health Care Specialists Consulted by Patients	180
Table 8.23: Average Amounts in CFAF per Year per Adult-Equivalent of Health Expenditures by Region and According to Standard of Living	181
Table 8.24: Household Housing Status According to Standard of Living and Region (in %)	182
Table 9.1: Average Expenditure on Health	191
Table 9.2: Average Expenditure on Education	192
Table 9.3: Average Expenditure on Leisure	192
Table 9.4: Size of Household by Region and Standard of Living	193
Table 9.5: Average Age of Household Head by Region and Standard of Living ...	194
Table 9.6: Discrimination of Households into Poor and Non-poor on the Basis of Quantitative Factors Excluding Total Expenditure	195
Table 9.7: Discrimination Variable of Households into Poor and Non-poor on the Basis of Quantitative and Qualitative Factors	196
Table 9.8: A Stepwise Discrimination of Households into Poor and Non-poor on the Basis of Quantitative Factors	197
Table 9.9: A Stepwise Discrimination of Households into Poor and Non-poor on the Basis of Quantitative and Qualitative Factors	197

Table 9A.1: Matrix of Correlations	200
Table 10.1: Total and Per Capita Consumption of Meat and Fish in Cameroon, 1980-98	202
Table 10.2: Description of Variables	207
Table 10.3: Descriptive Statistics for Continuous Variables Influencing Household Purchases of Livestock Products and Fish in Cameroon	210
Table 10.4: Maximum Likelihood Estimates of Factors Influencing Household Decisions to Purchase Beef, Chicken, Pork and Fish in Cameroon Obtained in the First Stage of the Probit Model	211
Table 10.5: Estimates of Factors Influencing Household Purchases of Beef, Chicken, Pork and Fish in Cameroon Obtained in the Second Stage of the Probit Model	213
Table 11.1a: Enrolment by Educational Levels	221
Table 11.1b: Enrolment by Nursery, Primary and Secondary Levels and by Gender	222
Table 11.1c: Gross Nursery and Primary Enrolment Rate (%) in 1997	222
Table 11.2: Mean and Standard Deviation of Key Variables	229
Table 11.3: Frequency of Schooling of Various Categories in the Sample	230
Table 11.4: Earnings Equation.....	231
Table 11.5: Percentage Increment in Earnings Associated with One Extra Year of Schooling $\ln/ds$	231
Table 11.6: Private Rates of Returns to Education (%)	232
Table A11.1: Change in Student Enrolment in Cameroon: Primary, Secondary and University, 1989/90-1996/97	234
Table 12.1: Distribution of Staff in MINEDUC Headquarters, January 2002	238
Table 12.2: Structure of the Budget of the Main Public Secondary Schools in Centre Province (millions of CFAF)	239
Table 12.3: Distribution of Students, Teachers and Classrooms, Centre Province (2000/01 academic year)	240
Table 12.4: Distribution of the Budget of the Secondary Education Provincial Inspectorates (1999/2000)	241
Table 12.5: Distribution of the Centre Province's General Education Secondary Institutions (2000/01)	242
Table 12.6: Change in the Administrative Structure of the Headquarters of MINEDUC	248
Table 12.7: Development of Secondary School Examinations Results	253
Table 13.1: Health Facilities, 1981-1992, 1997-2000 (numbers)	261
Table 13.2: Treatment of Illness by Expenditure Group, Cameroon, 1996 (%)	271
Table 13.3: Illness Episodes and Source of Treatment (%)	271
Table 13.4: Use of Public Facilities by Expenditure Group, 1996 (%)	272
Table 13A.1: Logit Estimation of the Use of Formal Health Care Services, 1996	277
Table 13A.2: Multinomial Logit Estimation of Choice of Health Care Provider	277

Table 13A.3: Determinants of Infant and Maternal Mortality, Cameroon, 1980-99	278
Table 13A.4: Health Outcomes and Selected Interventions, 1980-99	278
Table 13A.5: Health Outcomes and Real Per Capita GDP, Cameroon, 1980-99	279
Table 14.1: Trend of Average World Market Prices of Major Export Commodities (CFAF)	298
Table 14.2: Growth of Private Deposits	298
Table 14.3: The Banking Network in Cameroon	299
Table 14.4: Growth of Interest Rates (percentage points)	300
Table 14.5: Growth of Credit to the Private Sector (in millions of FCFA)	301
Table 15.1: Selected Economic Indicators, 1963-2000 (period averages)	311
Table 15.2: Structure of Cameroon's Tax-based Revenue Profile	314
Table 15.3: Major Categories of Taxes (Ratio to Gross Domestic Product)	317
Table 15.4: Ratios of T/GDP, Marginal Tax Rates and Income Elasticities of Tax Revenue	318
Table 15.5: Regression Equations for Tax Levels in Cameroon	320
Table 16.1: Results of Unit Roots Test	339
Table 16.2: Regression Results and Estimated Long-run Parameters (the dependent variable is Log(RER))	340
Table 16A.1 Real Exchange Rate and Real Exchange Rate Misalignment in Cameroon	345
Table 17.1: Cameroon: External Debt Indicators, 1975-97	349
Table 17.2: Cameroon: Savings and Investment (percent of GDP), 1984/85-1997/98	354
Table 17.3: Regression Results of the Public Investment Model	357
Table 18A.1: The Complete Specification of the Model	371
Table 18A.2: List of Variables and Parameters of the Model	375
Table 18A.3: Scenario Impact on Some Macroeconomic Performance Indicators of Cameroon and Gabon (in % change of base year)	378
Table 19.1: A Taxonomy of Types of Underground Economic Activities	381
Table 19.2 Summary of Literature on the Informal Economy	385
Table 19A.1: Guttman Method (CFA Francs, Billions)	396
Table 19A.2: Tanzi Method (CFA Francs, Millions)	397
Table 19A3: ECM Results of Model 2	398
Table 20.1: CEMAC: Production of Crude Oil (in millions of tons)	404
Table 20.2: Imports and Exports, 1980-2002 (in millions CFAF and as percentage of GDP)	409

List of Illustrations/figures

Figure 1.1: Evolution of Capital-Output Ratios, Cameroon, 1960-2003	12
Figure 2.1: The Evolution of Export Earnings as a % of GDP (1971/72 - 1995/96)	30
Figure 2.2: The Evolution of Coffee, Cacao and Banana Export Earnings as a % of GDP (1971/72 - 1995/96)	31
Figure 2.3: The Evolution of Coffee, Cocoa and Banana Export Earnings as a % of Total Export Earnings (1971/72 - 1995/96)	31
Figure 2.4: The Evolution of Export Prices of Coffee, Cocoa and Banana (1971/72 - 1995/96)	32
Figure 6.1: Sector output growth (billion CFAF)	104
Figure 8.1: Density Curves of Logs of Food Expenditures per Adult-equivalent According to Household Areas of Residence	164
Figure 16.1: Misalignment of the CFA Franc in Cameroon, 1972-96	341
Figure 17.1: Cameroon: External Debt Indicators, 1975-97	349
Figure 17.2: Cameroon: Public Investments, 1982-97	355
Figure 19.1: The Evolution of Tax Share in Total Revenue and GDP, 1975-2004	382
Figure 19.2: Estimates of Cameroon's Informal Economy Using the Guttman and Tanzi Methods	391

Foreword

Developing a Sustainable Economy in Cameroon is an ambitious effort as the authors try to set a blue print for Cameroon's economy. In the 1980s facing economic crisis, and as dictated by the structural adjustment programme, Cameroon sharply cut public investment expenditures before later cutting government consumption which were followed by privatisation, liquidation of public companies and reduction in the size of the public sector. All these measures are believed to have had devastating effects on the economy. Given the performance of the economy so far the authors suggest that much more effort, with a strong commitment of the main stakeholders, is required to guarantee sustainable economic development in Cameroon.

Truly, very few countries in Africa possess such enormous human and natural resources as Cameroon does. This volume brings out the challenges Cameroon faces in its quest for development as well as for designing appropriate strategies for addressing those development challenges. The economic literature hardly says how economic restructuring on expansionary macroeconomic policies can directly benefit the poor. Here, the book demonstrates the importance of rural-urban linkages and resource flow which are crucial for sustainable development. The volume rigorously brings out policies on rural development which can move people out of poverty.

In fact, the volume provides a solid theoretical framework and empirical analyses on the economy of Cameroon with strategies for promoting, implementing and achieving sustainable growth and development, thus providing excellent inputs to the policy making process as well as serving as a valuable text for students and the general reader. The thinking reflected in this volume will greatly contribute to the improvement and sustained economic development in Cameroon.

Professor Jean Tabi Manga,
Rector, University of Yaounde II,
Cameroon

Preface

Our interest in putting together this volume arose from a desire to contribute to the existing knowledge on the economy of Cameroon as much as from our perception of the knowledge gap in the existing literature in providing valuable inputs into the decision making process. The authors draw their policy implications from solid theoretical and empirical analyses of the economy.

By 1987 the rapid growth of the economy came to an abrupt halt followed by a sharp decline in the GDP growth. The underlying weakness of the economic policy and the economy was exposed by the external shocks as world commodity prices fell with external terms of trade falling by more than 50 per cent; at the same time Cameroon's oil output started declining. As the US dollar in which Cameroon's exports were denominated depreciated precipitously and Cameroon's real exchange rate appreciated significantly; this considerably affected the country's competitiveness. This was coupled with the poor performance of the public companies and poor provision of public and social services. In the 1990s, the per capita income fell well below the per capita income of the mid 1980s; the poverty level was also much higher than that of the pre mid 1980s. Cameroon sharply reduced public expenditures and agricultural producers' prices, sliced civil servants' salaries and amenities by more than 60 per cent, which was followed by a sharp 50 per cent devaluation of its currency relative to its pegged currency - the French franc. The GDP per capita fell significantly. As growth picked up towards the late 1990s, inequality in income distribution did not tend to decrease. This made the reduction of poverty the country's top development priority.

Cameroon's main products are from the agricultural or primary sector, thus underscoring the importance of transforming the economy, with intra and inter sectoral shift of resources from the low level of agricultural productivity to a much higher level of productive activities with significant value added, such that the agricultural sector is able to reduce the labour force while enabling the economy to produce more goods and services with a flexible labour force. The book discusses strategies of making the economy more productive with greater value added of its goods and services. Accordingly, with huge resources forming a solid foundation for Cameroon's growth and sustainable development, its growth cannot be short-lived as it has been in the past. However, as emphasised in the book, this must be based on proper implementation of the right policies.

The book stresses the importance of microeconomic policies for allocating resources efficiently as well as macroeconomic policies of price stability, better resource utilisation, growth with equity, equal distribution, and employment with all-

inclusive participation in the growth process. It is shown that the key factors in development include increased domestic savings, domestic integration with rural infrastructure, proper management of the national resources and human capital development. Accordingly, all these should be guided by strong and well functioning institutions with good accountability to the people, such that the rapid increase in public expenditure is properly utilised in facilitating, promoting, generating, providing and delivering more goods and services in both quantity and quality to the population, as well as continuously creating greater opportunities for Cameroonians.

Aloysius Ajab Amin

Acknowledgements

Since the beginning of the 1990s, the African Economic Research Consortium (AERC) has been supporting research on Cameroon's economy. Some of the research work was reported in two National Economic Policy Seminars in 1997 and 2000 organized by the Faculty of Economics and Management, University of Yaoundé II, Yaoundé. Thereafter, we decided to convert some of the studies into a book. Some two-thirds of this volume is based on AERC-funded research and the rest is derived from other pertinent research work on Cameroon. We thank all the authors for their insightful contributions to this volume, with appreciation to the anonymous reviewers; and we express our sincere gratitude to AERC and CODESRIA for making this publication possible.

Notes on Contributors

Dorothy Nkogko AGBOR is an economist and currently Chief of Statistics Service, Taxation Department Ministry of Economy and Finance, Yaoundé, Cameroon. She is a member of the African Economic Research Consortium (AERC). Her area of interest is taxation and fiscal policy. Her research work include: *An Empirical Investigation of the Level of Taxation in Cameroon*; and *An empirical investigation of the determinants of the level of taxation in Cameroon*.

Aloysius Ajab AMIN is Professor of Economics on leave of absence from University of Yaoundé II, Cameroon. Currently, he is the Deputy Director and Head of Training at the United Nations African Institute for Economic Development and Planning (IDEP) Dakar, Senegal. He has published in the areas of human development, poverty and development. His recent works include *University for Sustainable Development*; *The Economic Cost of Non-Regional Integration in Africa*; *Modelling Total Factor Productivity in African Economics*; *Economic Growth and Human Development with Capability Expansion*; and *Capability and Human Development in Poverty Reduction*. He is presently working on a book entitled *Long Term Growth in CEA franc Zone African Economies*.

Rebecca Marfawtem Ntongho AMIN is a Rural Sociologist and an Agro-economist currently with the RDG. She has written many articles on microfinance and women. Her published works include “Financial Sector Reforms and Women’s Survival Strategies in Cameroon” in *Demanding Dignity: Women Confronting Economic Reforms in Africa*, published by The North-South Institute; and, *Etude des trois systèmes financiers décentralisés: Cameroun Coopérative de crédit mutuel. Microprojet productif en faveur des femmes au Cameroun, et Société de développement de coton* published by the World Bank.

Wilfred J. AWUNG teaches microeconomics and monetary economics at the Department of Economics and Management Economics, University of Buea, Cameroon. He is a member of AERC network based in Nairobi Kenya. His published works include *Underlying Causes of Deforestation and Forest Degradation in Cameroon*; and *An Economic Analysis of Capital Flight in Cameroon*.

Ernest BAMOU is a Senior Lecturer at the Faculty of Economics and Management (FSEG), University of Yaoundé II and a Principal Economist, Economic Department, Ministry of Economic and Finance of Cameroon. Recently he has been appointed as the Senior International Trade Expert for the Department of Trade, Industry and Tourism of the Commission of the Central Africa Economic and Monetary Community (CEMAC) in Bangui, Central Africa Republic. He has

published research work on applied general equilibrium, modelling, trade and development.

Lydie Tankoua BAMOU is a lecturer at the Faculty of Economics and Management, University of Yaoundé II, and also a researcher at Centre d'Etudes et de Recherches en Economie et Gestion, University of Yaoundé II. Her areas of research include agriculture trade and trade negotiations. She belongs to the AERC network and has published extensively on agricultural trade and investment policies.

Francis M. BAYE is Assistant Professor of Economics at the Faculty of Economics and Management, University of Yaoundé II, Cameroon. He was a principal economist at the Department of Economics, Ministry of Economic Affairs and Finance, Cameroon. Currently he is chargé de mission at the Prime Minister's office, Cameroon. He has published various articles on poverty, growth and income distribution.

Emmanuel DOUYA is Assistant Professor of Economics, Faculty of Economics and Management, (FSEG), University of Yaoundé II. He has written and published articles on agricultural trade and development issues. He has also done consultancies for FAO, UNDP and European Union. His publications include *The Impact of Trade Liberalization and Domestic Policy Reforms on the Agricultural Sector in Cameroon*; and *An African Perspective on Aid for Trade*.

Vinatius Bweh EWANE is an Ingénieur Financier and Agro-Economist. He has a D.E.S.S in Banking and Finance from Cameroon's Institute of International Relations (IRIC) and a D.E.S.S in Economic Policy and Management from EPM, University of Yaoundé II. He is currently working as 'Chargé d'Etudes Assistant' in the Medium and Large Scale Farms Investment Promotion Unit in the Ministry of Agriculture and Rural Development, Cameroon. His main interest is in rural development.

Samuel FAMBON is Assistant Professor of economics at the Faculty of Economics and Management (FSEG), University of Yaoundé II. He is a member of the AERC network. He has carried out consultancies for the African Development Bank, World Bank and WIDER. His areas of study include economic growth, poverty and income distribution. One of his recent publications is *Lessons from Experience with Ex-ante Poverty Impact Assessments of Macroeconomic Policies in Cameroon*.

Daniel GBETNKOM has taught economic theory in the Faculty of Economics and Management (FSEG), University of Yaoundé II. He is currently Economic Officer at the United Nations Economic Commission for Africa Sub Regional Office in Niamey, Niger. He has written on regional integration and agricultural development in Africa

Sunday A. KAHN is a Senior Lecturer in the Faculty of Economics and Management (FSEG), University of Yaoundé II. He has published in the area of growth and agricultural development. One of his recent works is *the Volatility of Resource*

Inflows and Economic Growth in CEMAC Countries. Recently, he was a North-South Institute Visiting Researcher. He is also a member of the AERC network.

Bernadette Dia KAMGNIA is a Professor (Agrégé) of Economics and Vice Dean of Faculty of Economics and Management (FSEG), University of Yaoundé II. Her publications include *Ajustement structurel et investissement privé en Afrique: les cas du Burkina Faso, du Cameroun et de la Côte d'Ivoire*; *Targeting and benefit equity in the use of public health care facilities in Cameroon*; and *Growth-Employment Nexus: What are the specificities in Africa?*

Georges Ndoh MBANGA, before his death, was senior Lecturer at the Faculty of Economics and Management. (FSEG), University of Yaoundé II, Cameroon, and a member of the AERC network. His publications include *External debt and private investment in Cameroon; the impact of trade liberalization on external debt; and the African debt crisis: A critical examination of debt relief strategies*.

Alexander MBEAOH, is an economist, senior tax controller, Department of Taxation, Ministry of Economic Affairs and Finance. He holds an MA degree in Economic Policy and Management from the UN-African Institute for Economic Development and Planning (IDEP). His research interest includes taxation and societal issues. He is also a film producer with his latest film production entitled *Assarori* (Evil Deed).

Ousmanou NJIKAM is Assistant professor at the Faculty of Economics and Management (FSEG), University of Yaoundé II and an AERC Network member. He has done a lot of work on economic growth and industrialisation. His publications include *Exports and Economic Growth in Sub-Saharan Africa: Is there a Connection*; and *Total Factor Productivity Growth in Sub-Saharan Africa Countries*.

Isidor NOUMBA is Assistant Professor at the Faculty of Economics and Management (FSEG), University of Yaoundé II and a member of the AERC network. He has been a visiting scholar to the International Monetary Fund. He has written and published works on Public Expenditure, fiscal and public policy; and poverty issues.

Ntembe Augustine NTEMBE, is a lecturer Department of Economics and Management, University of Buea, He received his PhD in Economics from University of Yaoundé II, Cameroon. His research interests focus on development issues, human capital, and economic and institutional reforms. He is a member of the Private Sector Research Development Group. One of his recent works is *Boosting sub-Saharan Africa Exports through Investment in Transport Infrastructure: Issues and Challenges*.

Fondo SIKOD holds a PhD in Agricultural and Resource Economics from Oklahoma State University, USA. He is a Professor of Economics at the University of Yaoundé II, and a part-time lecturer in Gender Economics, Department of Women and Gender Studies at the University of Buea. He has special interests, research work and publications in the area of environment, poverty and debt. He has worked as a consultant to several international organizations and institutions including the

World Bank, United Nations Development Programme, The United Nations Environmental Programme, the World Wildlife Fund for Nature, the University of British Columbia (Canada), and the United Nations University. He has been a visiting scholar to the International Monetary Fund.

Isaac TAMBA is Assistant Professor of economics at the Faculty of Economics and Management (FSEG), University of Yaoundé II. He also heads a research institution and he is African Chair of Global Strategic Management Inc. His areas of research include Poverty Issues; Public Policy; and Fiscal Policy.

Emmanuel N. TAMBI is Senior Economist at the International Livestock Research Institute/African Union Office and PACE Project (African Union-Inter African Bureau for Animal Resources), Nairobi, Kenya, and former Deputy Chief of Centre, Institute of Animal Research, Bamenda, Cameroon. His areas of interest include animal products and trade, and among his publications include *Household consumption patterns of dairy products in Cameroon*; *Analysis of factors influencing dairy market involvement in Bamenda*; *The dynamics of household beef consumption in Cameroon*; and *Co-integration and error-correction modelling of agricultural export supply in Cameroon*

Regina TAWAH (currently on leave of absence) is Assistant Professor of Economics, Department of Business, Public Administration and Economics, Bowie University, USA. She has taught managerial economics at the Faculty of Economics and Management, University of Yaoundé and has done consultancies with international institutions including the World Bank, European Union and GERA. Her interests cover income distribution, informal and financial sectors, poverty, gender issues and economic justice.

Joseph-Pierre TIMNOU is Assistant Professor at the Faculty of Economics and Management (FSEG), University of Yaoundé, and teaches part time at IFORD. His main area of interest is in demography and development. His publications include *Migration, urbanisation and Development* and *Return to the village: A solution to the economic crisis in Cameroon*.

1

Introduction: Conceptual Issues and Overview

Aloysius Ajab Amin

Introduction

Cameroon is blessed with enormous resources. Its huge resource endowments include: (i) natural resources, with mineral reserves, pastures and forest, fertile soil, arable land, water, a good climate, plentiful sunshine and rainfall, and a sea coast with natural harbours; (ii) human resources, with one of the highest levels of education in the continent; and (iii) a very rich, highly diversified cultural heritage. The first category of assets can also be classified to include institutional, financial and infrastructural assets both publicly and privately provided, such as communications and transport, schools and health infrastructure. Natural assets include natural and physical capital. All these greatly affect the living conditions of the population. Growth in per capita income or output is generally an outcome of positive changes in endowments – broadly defined as capital that includes physical capital in the traditional factors of production, machines and materials-processing inventory as well as intangible capital including human capital.

Human capital incorporates human knowledge and capacity-strengthening through investments in education with training, health care and research and development (R&D). However, only tangible capital is included in national accounts, with investment regarded as additional to capital. The health of an economy is determined by its labour supply. The educational system produces an educated and skilled labour force. Given its natural and human resource base, Cameroon has a sound and solid foundation for sustainable economic development, a development that can easily meet all the needs of the population and much beyond. An industrious and willing labour force backed by enormous natural resources provides the ingredients for economic success. Cameroon's economic system brings together the country's resources, technology and entrepreneurial and managerial skills to meet the human needs of the population through production, distribution and consumption of goods and services.

Thus, the management of the economy is critical in ensuring that resources are efficiently and productively utilized, with a key role of financial institutions in ensuring that producers and entrepreneurs have access to the funds needed for appropriate investments. The country has experienced periods of high economic growth (see Table 1.1 below), an indication that with the right set of development policies or strategies Cameroon can attain a broad-based development. For the period 1967–78, the gross domestic product (GDP) grew at more than 5.7 per cent annually. In the last quarter of the 1970s, which also witnessed favourable terms of trade, income significantly increased at about 10.2 per cent annually until the mid-1980s. Population growth rate was 2.8 per cent yearly. Private consumption increased by 5.4 per cent. Government finances and savings were significantly high. At this time Cameroon's economic performance was likened to that of the fast-growing East Asian countries.

But the Cameroonian economy collapsed in 1986, after two decades of supposed good performance. This reverse posed great challenges to the policy- and decision-makers. One wonders how a country with such a huge resource base could have so easily slipped into such a devastating crisis. What then could be done, using its vast potential, to put the country on a path of sustainable development? These are basic common issues, which need to be addressed within the country's own context, yet also taking exogenous factors into consideration.

The main objective of this book, which is based on rigorous research, is to debate and discuss solutions to some of Cameroon's problems and, further, to provide inputs into the decision-making process for improved economic performance and development. The book contains 20 chapters, subdivided into five parts, and including general introductory and concluding chapters, as will be described in the last section of this Introduction.

The Cameroonian economy sustained a high economic performance during the period 1961–86, a growth that was predominantly the result of expansion in the agricultural sector, with a strong boost from the petroleum sub-sector towards the end of the 1970s. Petroleum increased its share of GDP to 18 per cent, reducing that of agriculture from 42.3 per cent in 1962 to 33.4 per cent in 1991.

The agricultural sector, which has very high potentials for increased productivity, is typified by smallholder production with low productivity per capita. The industrial sector is dominated by firms with high value-added production activities while the primary sector is characterized by agricultural activities. The tertiary sector, mainly the service sector, has both large and small firms where value added is generally minimal. It includes both the public sub-sector and the informal sector. The importance of the agricultural sector lies also in its employment of about 70 per cent of the active population, and its contribution of above 30 per cent of GDP and 62 per cent of total exports.

Agriculture plays a synergistic role in development. It supplies labour and food as well as foreign exchange for the economy. Equally, industry provides inputs for agriculture, and agriculture purchases industrial or manufactured goods. The transi-

tion and transformation from primary goods to manufactured goods including exports is constrained by complementary factors. The heavy bureaucratic apparatus with regulatory obstacles imposes severe constraints on those carrying on economic activities in a country. These complementary factors (besides the necessary infrastructure) include a pool of scientists and engineers, a skilled work force and adequate infrastructure. The absence of these factors may lead to failures in coordination, and thus poor performance. It should be noted also that an indicator of investment climate in the case of Cameroon is provided by shipping transportation costs, which are high, despite the country's natural sea harbours and good sea coast.

Since 1993, the gradual decline of the oil sub-sector has also served to increase the dominance and relative importance of the agricultural sector, particularly in terms of its contribution to GDP. This is a particular feature of the Cameroonian economy, whereas in many countries the relative agricultural contribution to GDP has been declining in response to increasing diversification and greater productivity. In Cameroon, the share of industrial production in GDP has averaged 31 per cent annually, but its contribution to total exports has been less than 7 per cent. The service sector is now estimated to contribute almost 35 per cent to GDP. From 1986 GDP fell sharply, such that over the period 1986–93, per capita income and consumption declined, in the latter case by more than 10 per cent. This resulted in the collapse of industrial production, which negatively affected household consumption. Agricultural production in all the major crops fell, although more recently there has been a slight increase in crop output. Activity increased in the informal sector, which tends to absorb most of the unemployed and underemployed labour.

Both internal and external factors were responsible for the collapse of the Cameroonian economy, with the leading external factor being the fall in world commodity prices, worsened by the depreciation of the US dollar in which Cameroon's exports are denominated. The internal factors were and remain mainly structural and institutional. The cumulative effect was a low and reduced income, particularly for those involved in agricultural activities, notably farmers. The situation was worsened later on by the radical reduction of civil servants' salaries in 1993, followed the next year by the CFA franc devaluation of 50 per cent relative to the French franc, which drastically cut into individual purchasing power. The cumulative effects of both the salary cuts and the devaluation have been far-reaching for Cameroonians.

Economic Growth and Development

Economic growth has slowed since 1988. The process of increasing economic output and expanding productive capacity has been weakened. Potential output and consequently potential growth have not been generated as expected. The resources of the economy in terms of labour, physical and human capital are not being fully employed. Together these factors have led to the country underperforming significantly below its potential. This situation illustrates a paradox in the development process: so much needs to be done using available resources, yet many of these

resources remain idle, unemployed and underemployed. Appropriate capacity needs to be enhanced and resources properly managed for actual growth to occur. Thus, the challenge facing countries in their development process lies in transforming and generating their valuable resources; designing and applying sound policies for development; building and strengthening human capital with appropriate institutions; and managing the economy appropriately for the production, distribution and consumption of goods and services. These issues are addressed in this volume.

Actual growth depends on positive change in goods and services produced as well as in their value. This in turn relates to the extent to which the productive capacity is increased and utilized. If some of the productive resources are unemployed or poorly utilized then actual growth or output will fall short of potential growth or output. Hence for growth or even short-run growth to be sustainable in the long run, both potential and actual growth must be maintained and improved. This is a crucial criterion for economic development and growth, but even more important is the proper organization and management of the resources that are critical in the development process.

Positive changes in per capita income or output indicate the growth of the economy. Better living conditions, improved nutrition, increased literacy, lower mortality rates, and the spread of cultural and recreational activities and social amenities are important elements of the quality of life. Living standards depend on people's ability to have access to and buy goods and services. To be able to purchase goods and services, income is needed. As GDP is generated by income, expenditure and output, a higher income or income per capita means a higher level of command over goods and services and consequently a higher standard of living, taking into account the issue of distribution and composition of expenditure. External and internal factors combined have led to almost 50 per cent drop in real per capita income in Cameroon since the 1980s. This drop in income has had negative impacts on the country's development.

Development can be promoted by increasing life expectancy, reducing poverty, and improving health and education, thereby empowering people to take part in decision-making. It has been strongly argued (Sen 1996) that starvation and poverty can be avoided if people have the income or resources to purchase adequate food. Empowering the poor by raising their income (especially through employment) is thus the most efficient way to reduce starvation and poverty. Development, according to Sen, is the quality of life in terms of capability expansion, that is, broadening the set of valuable 'beings' and 'doings' an individual can achieve. Sen's capability expansion adds another dimension to the development paradigm. Basic to expanding human choices is developing an individual's capabilities for what he or she can do or be. Development policies should, therefore, be both goods-orientated and capabilities-orientated towards fulfilling human needs.

Growth will thus focus on quantity while development considers both quantity and quality. Development includes a growth process with changes aimed at improving living standards. Increasing GDP or income per capita is fundamental. During the

development process the structure of the economy will be changed in important ways. But since the 1980s, the basic structures of the Cameroonian economy have not significantly changed towards generating high income-earning activities.

The World Bank ranks countries according to their per capita income. But the United Nations Development Programme (UNDP) goes further in using the concept of human development in defining development and ranking countries. The human development concept regards people as the goal of development, and, according to the UNDP, development is the enlargement of people's choices to lead valuable lives (HDR 2002). In defining human development as a process of enlarging people's choices, the UNDP uses three criteria: (i) access to resources using purchasing power based on per capita income and cost of living, (ii) long and healthy life reflected by life expectancy, and (iii) education as indicated by adult literacy rate.

The concept of development has evolved from one of quantitative changes in GDP or per capita income through human development to a broader measure of development concerned with improving the well-being of individuals or people with growth as a key factor. The main objectives of development that follow are to: (i) improve living standards, including raising incomes, creating jobs and providing better health and more and better education; (ii) increase not only the availability but also the improvement and distribution of food, shelter, health, education, protection, etc.; and (iii) expand the range of socio-economic choices available to society and individuals. People are the ends and means of development, hence development should be seen as a quality improvement in people's lives that it is equitable, intra- and inter-generational, and consistent with human freedom.

Technological change is central to economic growth and growth is crucial to development. Sustained output expansion or economic growth is fundamental to economic development. Why development or economic growth has not taken place in Cameroon is discussed through this volume, but it should be noted at the beginning that a key constraint has been the type of institutional development in the country. Weak institutions have meant slow transformation of primary goods into manufactured goods with less value added, and hence lower contribution to GDP and thus low income levels. There is much evidence to show that economic growth is based on the appropriate human capital formation, which is organized and managed in strong institutions.

Institutions

The right kind of economic growth depends on the right policies. The policies that ensure the right types of growth depend on the socio-politico-economic institutions that formulate and implement the policies. What are institutions and what are the roles of institutions? Institutions provide rules, norms and their enforcement mechanisms (Aron 2000; North 2000). Institutional development may be based on proper governance, accountability to the people, political stability, and government effectiveness, high regulatory quality, respect of the rule of law, 'good control' of corruption, etc. Well-functioning institutions define and implement the rules and

regulations for the performance of different activities and provide the necessary incentives for socio-politico-economic activities in the society or economy. They determine the transaction and transformation costs of the economy, such that weak institutions generate very high costs of transformation/production and transaction. To this end weak institutions hinder economic growth and development.

Strong institutions create a favourable environment for socio-politico-economic activities to be carried out. Such an environment is a prerequisite for productive transformation and capability expansion in any economy, particularly a developing economy. Institutions are necessary to create the appropriate environment for individuals and agents to function properly and attain their expectations and objectives in life. Institutions have to change or evolve to keep abreast of technological progress in order to achieve the best possible results. But institutional change is hardly in tandem with technology mainly because of different levels of inertia. This type of institutional matrix is not attained in some societies and so they fail to capture potential gains of exchange and trade, and consequently fail to experience economic growth and development (Knack and Keefer 1995). The structure and functioning of the highly centralized Cameroonian bureaucracy to some extent does not impact positively on the initiation, formulation and implementation of policies at all levels. Top-down there are two structures of the bureaucracy – the technocratic and administrative arms – with the administrative arm having greater power and means to control and supervise the technocratic arm and the rest of the system. This tends to compromise the quality, efficiency and competence of appointees who are supposed to formulate and execute policies. The outcome is usually poor because Cameroon has weak institutions. Good governance creates an enabling environment for risk-taking, which is very important for investment. The state should be able to establish strong institutions for policy design and implementation, with rules and institutions supportive of sustained growth and development.

Capital Formation

Low savings and investment rates can produce low and slow growth. High savings and investment should necessarily generate high growth rates. In the case of Cameroon, high savings and investment rates have not led to corresponding growth; this is partly a consequence of high levels of inefficiency in resource use and poor management. The potential rate of capital formation depends on the ratio of savings to income and investment. The actual level or desired investment that cannot exceed the potential level depends on the present and expected rates of return from additional investment. For the national output growth rate to increase as a result of capital stock, the value of extra output resulting from a unit of capital should be greater than the cost price of the capital or the interest rate on borrowing the capital.

Foreign capital or credit flowing into a country (or even domestic capital investment) depend on the expected (rates of) returns, which are generally discounted by investors because of many factors, such as regulations and business risk. The country's poor regulations and high risk involve many factors, both social and political,

which encourage domestic capital flight and in turn discourage investors. High risk discourages capital import and direct investment, which relates to the expected rates of return to investment between foreign and domestic capital markets, given appropriate facilitating factors. These rates of return are discounted on the basis of business regulations and country risk. Cameroon's capital market is very thin and practically non-existent. Also because of missing capital markets investors cannot make ideal decisions on which goods to produce.

A country must strive to increase the efficiency and productivity of its resource use such that high growth rates can be achieved through external borrowing. But it is important to consider key factors in capital formation as a crucial determinant in economic growth. These include socio-economic stability, necessary infrastructure, security of investment, enabling of entrepreneurship and availability of money capital to risk-takers, and willingness to undertake risk. This underscores the importance of an enabling environment.

Savings rates in East Asian economies have been much higher than those in South Asia and Africa and even higher than those in countries in the Organization for Economic Cooperation and Development (OECD). This means that poor economies such as those in Africa can also mobilize large savings for investment in order to attain high rates of economic growth. The main sources of domestic investment are from domestic savings and foreign capital imports. Investment needs may far exceed domestic saving capacities. Hence, there is need for capital imports and foreign direct investment to fill the gap between domestic investment and savings. The danger is that capital imports may accumulate so much that the debtor country is unable to meet debt-service obligations, thus contributing to debt problems instead of contributing to growth. For a resource-rich country like Cameroon, there should be no excuse given for not mobilizing sufficient savings for investment. Cameroon's huge resources have to be properly managed and utilized.

Evolution of the Capital–Output ratio

Theoretically we can link capital to output, with average and marginal changes and derive a capital–output ratio (COR) and marginal or incremental capital–output ratio (ICOR) from the production function. ICOR shows how much output is contributed by a unit of additional capital. We illustrate this concept with a Cobb–Douglas production function under constant returns to scale:

$$Y = AK^{\alpha} L^{1-\alpha} \quad (1)$$

where α is the elasticity of output with respect to capital. Differentiating equation (1) with respect to K , we obtain:

$$\frac{SY}{SK} = \alpha AK^{\alpha-1} L^{1-\alpha} \quad (2)$$

$$\frac{\delta Y}{\delta K} = \alpha \frac{AK^\alpha}{K} L^{1-\alpha} \quad (3)$$

$$\frac{\delta Y}{\delta K} = \alpha \frac{Y}{K} \quad (4)$$

$$\alpha = \frac{\delta Y}{\delta K} \frac{K}{Y} \quad \text{is the elasticity of output with respect to capital input.}$$

As seen from Table 1.1 and Fig. 1.1, the capital–output ratio in Cameroon tended to increase by around one in the 1960s and around four in the period 1997–2003, with ICOR fluctuating over the years but with a positive trend. It has been noted (Amin 2002) that low capital–output ratios are characterized by high savings countries, with high savings countries having ratios of around two, showing how well capital resources are being utilized, since fewer units of capital generate a given unit of output. However, everything depends on how a country accumulates, maintains and utilizes its capital for productive purposes. High capital–output ratios may reflect poor utilization or inefficient use of capital and poor maintenance of the capital stock, and hence may not automatically result in an increase in output. It must be noted that data in the table for GDP and capital stock may differ from those obtained directly from the official national sources.

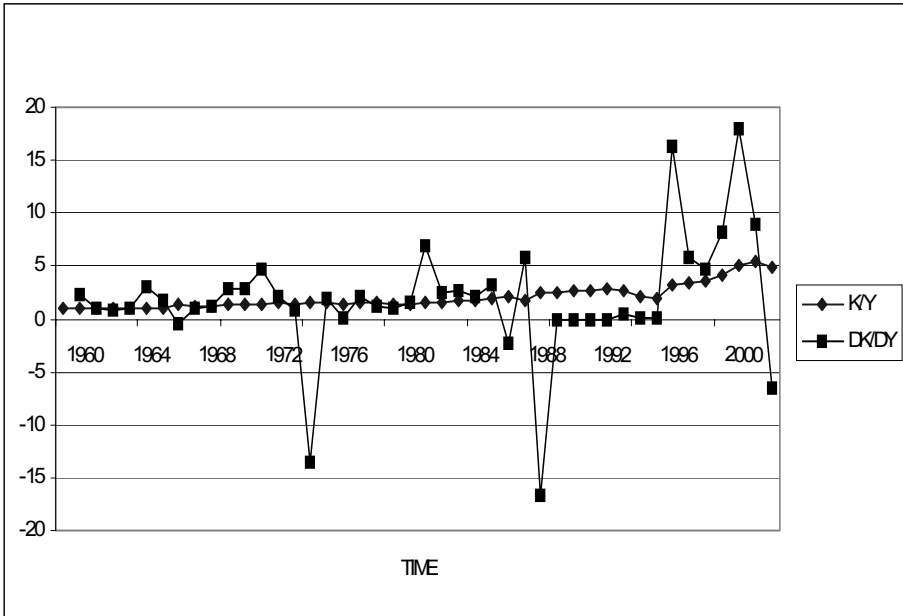
Poverty Estimates

Today there is a general agreement that poverty reduction or eradication is the main concern in policy formulation. But measuring poverty is still highly debatable. The definition of the poverty line, which separates the poor from the non-poor, remains contentious. This is because poverty and poverty lines are multidimensional concepts and an objective standard for ‘what constitutes the basic requirements’ for measuring poverty or poverty lines is hard to formulate. The poverty line is crucially important in distinguishing the poor – that is, identifying which households or individuals are poor and how poor they are. It is equally important to be able to say how much poverty exists.

**Table 1.1: Evolution of Capital and Output (GDP),
Cameroon, 1960–2003 (market prices in billion francs CFA)**

Year	GDP	Physical Capital Stock	COR	ICOR	DY/DK	α
1960	1,091.35	1,095.1	1.003436			
1961	1,104.27	1,126.0	1.019678	2.3916476	0.418122	0.42635
1962	1,137.85	1,159.86	1.019343	1.0083346	0.991734	1.010918
1963	1,180.44	1,196.48	1.013588	0.8598287	1.163022	1.178826
1964	1,222.31	1,238.73	1.013434	1.0090749	0.991007	1.004319
1965	1,247.08	1,314.99	1.054455	3.0787259	0.32481	0.342497
1966	1,305.23	1,414.22	1.083502	1.7064461	0.586013	0.634947
1967	1,148.73	1,494.0	1.300567	-0.509776	-1.96165	-2.55125
1968	1,223.43	1,571.88	1.284814	1.0425699	0.959168	1.232353
1969	1,283.09	1,640.29	1.27839	1.1466636	0.872095	1.114878
1970	1,320.14	1,748.29	1.324322	2.9149805	0.343055	0.454316
1971	1,369.86	1,890.54	1.380097	2.8610255	0.349525	0.482379
1972	1,401.87	2,042.26	1.456811	4.7397672	0.210981	0.307359
1973	1,478.49	2,203.27	1.490216	2.1014067	0.475872	0.709152
1974	1,637.19	2,337.77	1.427916	0.8475117	1.179925	1.684834
1975	1,624.89	2,504.46	1.54131	3.552112	-0.07379	-0.11373
1976	1,695.18	2,646.6	1.56125	2.0221943	0.494512	0.772057
1977	1,838.60	2,671.05	1.452763	0.1704783	5.86585	8.521689
1978	2,108.65	3,245.98	1.539364	2.1289761	0.469709	0.723054
1979	2,388.76	3,585.24	1.500879	1.2111674	0.82565	1.2392
1980	2,762.24	3,962.79	1.434629	1.0108976	0.98922	1.419164
1981	3,118.93	4,539.71	1.455534	1.6174261	0.618266	0.899908
1982	3,201.44	5,107.81	1.595473	6.8852407	0.145238	0.231724
1983	3,449.68	5,704.57	1.653652	2.4039625	0.41598	0.687886
1984	3,651.18	6,227.45	1.705599	2.5949396	0.385365	0.657279
1985	3,930.46	6,796.32	1.729141	2.0369157	0.490938	0.848902
1986	4,246.13	7,833.81	1.844929	3.286627	0.304263	0.561344
1987	3,969.00	8,477.16	2.135843	2.3214716	-0.43076	-0.92004
1988	3,662.11	6,712.9	1.833069	5.7488373	0.173948	0.318859
1989	3,538.32	8,785.34	2.482913	16.741592	-0.05973	-0.14831
1990	3,451.44	8,798.89	2.549339	-0.1559622	-6.41181	-16.3459
1991	3,340.20	8,800.20	2.634633	-0.0117763	-84.9161	-223.723
1992	3,195.30	8,810.00	2.757175	-0.0676329	-14.7857	-40.7668
1993	3,125.50	8,812.10	2.819421	-0.030086	-33.2381	-93.7122
1994	3,224.60	8,850.50	2.744682	0.3874874	2.580729	7.08328
1995	4,131.00	8,901.20	2.154733	0.0559356	17.87771	38.52169
1996	4,555.00	8,965.10	1.968189	0.1507075	6.635368	13.05966
1997	5,017.40	16,525.3	3.2936	16.349932	0.061162	0.201444
1998	5,367.40	18,542.8	3.4547	5.7641375	0.173486	0.599344
1999	5,709.00	20,131.6	3.5263	4.6513171	0.214993	0.758129
2000	6,602.50	27,418.9	4.1528	8.155809	0.122612	0.509183
2001	7,122.60	36,718.4	5.1552	17.880341	0.055927	0.288317
2002	7,595.40	40,923.3	5.3879	8.8934605	0.112442	0.605827
2003	7,951.10	38,570.0	4.8509	-6.6158692	-0.15115	-0.73322

Source: Nehru and Ashok 1998 and author's calculations, 1990–2003.

Fig. 1.1: Evolution of Capital–Output Ratios, Cameroon, 1960–2003

Those regarded as poor are defined as unable to generate enough resources to satisfy their basic needs of food, clothing, shelter and other necessities of life. Basic needs are normally measured and priced in a given currency within a given context. There may be disagreements on what constitute a minimum bundle of basic needs for a cut-off point. Who determines the bundle of basic needs and on what basis? This has generated much discussion. However, the consumption units (such as households or individuals) are usually classified as the non-poor (those above the poverty line) and the poor (those below the poverty line).

Arbitrary setting of poverty lines may tend to ignore the fact that such lines distort poverty profiles and poverty analysis. Despite the conceptual and empirical issues involved in setting poverty lines, the basic issue is having a poverty line that generates a consistent poverty profile such that relative positions of households or individuals do not change no matter the sub-groups they belong to. When there are different poverty lines according to different regions, such as rural poverty lines set below urban poverty lines, inferences become more clouded. We use the national poverty line, more so as the objective is to eliminate poverty, particularly at the level of the poorest of the poor. Poverty measurement is important for determining exactly the numerical differences of poverty across regions or sectors or even individuals. It gives an overview of individual or household experiences as well as

reflecting an aggregate view of poverty over time. Measuring poverty leads to formulating and testing hypotheses on the determinants/causes of poverty, which helps in setting targets and also for judging actions/measures taken to combat or eradicate poverty.

In this volume, the contributors utilize physical measures such as nutrition or food intake as a basis for defining poverty. The poverty line is defined in terms of income by initially calculating the amount of money (or expenditure) needed to attain a minimum nutrition or food intake. The expenditure is adjusted by taking into account appropriate non-food requirements. The contributors, therefore, apply the consumption expenditures method – food calorie or energy intake (FEI) – in estimating the poverty line. They estimate the total cost of food necessary to attain a given level of food energy intake that could be obtained from a given basket of food. Cameroon adopts the 2,400-calorie (as recommended by the Food and Agriculture Organization, FAO) level as the standard below which a person is regarded as being poor. Total expenditure can be obtained on a basket of food items corresponding to this level of calories.

In defining the poverty line several measures of the extent of poverty exist. Currently, the most used is the Foster, Greer and Thorbecke (1984) measure of poverty (FGT). It is convenient in policy analysis, as it is decomposable across sub-groups with quantitative measures. We can assume that we have been able to resolve the poverty line problems and related issues. Then let an indicator measuring the welfare or standard of living be y with a density function of $f(y)$. y is assumed to be continuously distributed. The poverty line is given as z ; and then the poverty is measured as a function $\phi(y, z)$, which is taken to be non-increasing in y , non-decreasing in z and homogenous to degree zero.

If we further work within the class of additive poverty measure to ensure sub-group consistency, we can write the value of aggregate poverty as

$$P(z) = \int \phi(y, z) f(y) dy \quad (1)$$

That is, increases of poverty in a sub-group, *ceteris paribus*, the aggregate poverty must also increase. For individual or sub-group we can measure poverty as

$$\phi(y, z) = \left[\left(1 - \frac{y_i}{z} \right) \right]^\alpha \quad (2)$$

α is the poverty aversion parameter, which can take values of 0, 1 and 2. As α takes values, 0, 1, and 2 the index $\phi(y, z)$ becomes more sensitive to the measurement of the extreme poor, and brings out the intensity or severity of poverty. Note that we could as well use a discrete function

$$P_\alpha = \frac{1}{N} \sum_{i=1}^a \left(1 - \frac{y_i}{z} \right)^\alpha \quad (3)$$

The FGT measure addresses the distributional underpinning of poverty. Put simply, it is a sum of an individual or household's poverty gaps as a proportion of poverty line (z) that is divided by the total population in the country or society. By raising the poverty gaps to a power α , it becomes distributional sensitive. Generally α is made to take values of 0, 1 and 2. When $\alpha = 2$, the proportionate shortfall from the poverty line is the power 2, which captures the magnitude of the shortfall. It is summed over the poor (q) and normalized by the total population (n). When $\alpha = 0$, we have the headcount and $\alpha = 1$ is the income gap ratio. The index of measure is quite interesting when $\alpha = 2$. This index reflects the poorest of the poor and has important poverty reduction implications. Equality in poverty takes P_0 , which can simply measure poverty, with P_1 capturing the depth of poverty. Secondly, it indicates how inequality raises poverty. Thirdly, in the presence of poverty, inequality transfer becomes very sensitive. Fourthly, the index can measure the poverty contributed by various sub-groups of the poor in the society.

Until recently, studies on poverty in Africa discussed only the headcount ratio, the number of the poor ($\alpha = 0$). The depth and severity of poverty was little discussed. This was also problematic because there could be some level of reduction in the depth or severity of poverty without a reduction in the number of the poor. It must be noted that poverty is also generated because of gross inequality in incomes and assets including education and health, access to and control over public resources, and access to essential services. Different aspects of poverty interact and reinforce one another in important ways: improving health improves well-being and increases income-earning potential, while increasing education also improves well-being and health. In the same way, a lack of any of these items can generate poverty. High incomes have many complementarities.

Macroeconomic Policy

Debt accumulation or addition to a country's stock of debt over time could contribute to growth and development, and increase the country's capacity and ability to pay back its debts, especially when borrowed funds are used to increase and enhance the productive capacity of the economy. The aim of external borrowing is to promote high, stable and sustainable growth rates that are consistent with the balance-of-payments position over time. The credits should therefore be used such that they generate more resources for repayment of the debt and with a balance left over. This means that investment projects must have rates of returns that are higher than the rate of interest on the debt. Unfortunately, a debtor country may be unable to generate enough output and export earnings to be able to meet its domestic and external debt obligations. This is partly because the necessary public goods and services such as public infrastructure have not yet been created to facilitate the production, distribution and consumption of goods and services.

Theoretically a country can depend on external borrowing or credit for its domestic investment purposes. Credit from abroad at little or no cost could be used effectively to create production facilities such as factories, infrastructure, etc., for efficient production

and distribution of goods and services. The commodities produced can then increase domestic production and expand exports. The increase in domestic commodities can increase the availability of domestic goods as well as result in the reduction of imports. Furthermore, the increase in exports of domestic manufactured goods can result in foreign exchange earnings. This would mean an expansion of domestic capacity to pay the borrowed funds through foreign exchange earned and saved. In such a case, external borrowing poses no problem.

In fact, as exports (consequently foreign exchange earnings) grow faster than debt accumulation, the debt–export ratio decreases and the export of manufactured goods and services expands. Hence, effective utilization of domestic savings complemented by foreign credit can expand domestic production and export capacity, which generate adequate foreign exchange earnings to more than meet debt obligations. Unfortunately, Cameroon's external credit combined with domestic savings could not be effectively utilized to create such a virtuous circle partly because of coordination failure.

While domestic and external factors generally contribute to debt problems, internal factors may include the following: poor macroeconomic policies, fiscal irresponsibility with poor management of resources, overvalued exchange rates, borrowing against exports to maintain consumption levels, etc. External debt has been a serious problem and has constrained growth mainly because of increased debt service payments, which have left very little or nothing for capital importation and capital formation. The overriding objective of debt management is to make sure that the country's external obligations are within the capacity of the country to pay. These entail well-designed policies for external borrowing, control and monitoring of external borrowing and a comprehensive and accurate databank on debt.

Devaluation

Devaluation should increase exports and export earnings, which should also increase domestic revenue. With a large quantity of domestic currency resulting from export earnings non-tradables prices should fall. Resources are therefore supposed to shift out of the non-tradables sector into exports (tradables). But in the case of Cameroon, devaluation was introduced as one of the last measures of economic reform. Exports require a developed infrastructure, which needs much public investment. Both private and public investments have to be used to increase the capacity of export industries. In fact, public investment is usually required in transportation systems, which include the road infrastructure, railway network, port facilities, storage facilities and communications for free and easy mobility of resources. These were very weak in Cameroon even before the devaluation. Hence the aim of devaluation was poorly attained.

Other components of public expenditure prior to devaluation that hindered the process of devaluation were: (i) cuts in social spending and education programmes and health, expenditures, which typically affect the poor much more than the non-poor; and (ii) elimination of public investment projects, which ended up reducing capital accumulation in the long run. Hence, the adjustment process slowed because of a global fall in investment in the economy.

The Real Exchange Rate in The Cameroon Economy

Cameroon and Cote d'Ivoire are the two largest economies in the CFA franc zone. Cameroon contributes around 50 per cent of the Banque des Etats de l'Afrique Central (BEAC) region GDP and is the most diversified economy in the region. Before the early 1980s Cameroon's export boom provided considerable resources including foreign earnings, which affected both domestic and external balances. The marked increases in resources particularly from international trade also sharply increased public expenditure and pushed up domestic prices. The high price of non-traded goods relative to traded goods and services contributed greatly in appreciating the real exchange rate (Amin, 1997). With many factors working towards high external and internal imbalances, the government started addressing these problems by running down foreign reserves, increasing external borrowing and accumulating domestic debt.

In all, the CFA franc zone countries including Cameroon were unable to cut spending adequately to match their fall in revenues, which was exacerbated by real exchange rate appreciation. Yet they were unable to print money to finance the deficit, so expenditure rose despite expenditure cuts. In short, Cameroon, as a CFA-country, was unable to adjust using only one instrument (fiscal policy), with exchange rate and money policy flexibility virtually ruled out. The operation (with reserves) account (kept in the French treasury) tends to be conducive to greater indebtedness in the CFA franc zone since the French treasury can intervene in using cash advances to support a budgetary imbalance. Economists (M'bet and Niamkey 1993; Tchundjang 1981) have strongly argued that the fixed parity of the CFA franc with the French franc (and today with the Euro) have not necessarily maintained stability in the CFA franc zone. For one thing fluctuations in the French (or European) monetary system are easily transmitted into the CFA franc zone. Furthermore economic activities in the CFA franc zone have been geared towards satisfying the needs of metropolitan Europe.

This monetary arrangement had made it difficult to allocate credit into the productive sectors and satisfy the needs of the African countries of the CFA franc zone. During the period of FF/CFA franc parity, the parity tended to lead to more outflow than inflow into the CFA franc zone countries. In the case of the pooled reserves in the operations account held in the French Treasury for the CFA franc zone, CFA franc countries have tended to bear certain types of risks and costs: (i) for instance, there has been a double exchange risks on export earnings being converted from other hard currencies like the US dollar into the French franc to the operations account and the pooled reserves in the operation account converted to pay for imports from other currency areas; in either method of conversion the rate of exchange tended to disfavour the CFA franc; (ii) there are also some kinds of costs associated with balances in the operations account, including interest payments to French Treasury when negative balances on the operation accounts occurred and conversion costs related to advances given by the French Treasury. These advances are borrowed from the French Treasury. The costs are related to the interest rate and exchange rate. Calculations done by M'bet and Niamkey (1993) for the period

1978–88 show that the CFA franc countries lost more than they gained in this decade. Previously trading out of the FF/CFA franc zone led to high costs, since high exchange costs and exchange risks outweigh interest payments, hence cause heavy losses.

Membership gains or losses of the monetary union go further than interest payments on reserves and transactions exchange. There was also the problem of huge net transfers from the CFA franc zone to France before the demise of the French franc, in addition to informal transfers. Using the data from UMOA (Union Monétaire Ouest Africaine, the Monetary Union of West Africa), it has been shown that these countries incurred net losses from the monetary arrangements (M'bet and Niamkey 1993). The common monetary policy prevented individual countries from using individual country monetary policy to manage their economies. But it did encourage foreign borrowing. So it is strongly argued that the operations account makes it easy to borrow money abroad. In fact, it has been stated that countries with positive balance in the operations account have easy access to foreign capital and thus incur greater indebtedness.

Trade and fiscal policy are linked by the exchange rate. An increase in fiscal deficit tends to push up the level of domestic prices. As excess demand leads to higher domestic prices, which tend to grow faster than prices in foreign trading partner countries, this can result in the overvaluation of the domestic currency and to loss of international competitiveness as there is a preference for non-tradable over tradable. With time, overvaluation becomes unsustainable, leading to devaluation, which must be accompanied by other policies to make it effective or else exchange rate devaluation may increase the budget deficit depending on the composition of revenue and expenditure. Cameroon suffered from real exchange rate overvaluation at the same time as from deterioration in its terms of trade. The devaluation did not remove the external exchange rate constraint and so made internal adjustment (such as fiscal adjustment) more difficult.

The difference in the real exchange rate regime is a key in understanding the differences in the performances of different economies. Empirical evidence has shown that groups of countries with pegged exchange rate arrangements have been less successful in adjusting the real exchange rate, which is out of equilibrium mainly because of shocks to terms of trade. Initially, Cameroon's main trading partner was France; with the switch to the Euro as the pegging currency, the European Union (as an entity) became Cameroon's main trading partner.

The CFA franc zone's inability to properly adjust the real exchange rate is inherent in the fixed exchange regime itself. Also the inability of Cameroon to adjust the real exchange might have been related to the authorities not adhering to the financial discipline imposed by the exchange rate regime. Devaluation was not accompanied by other policies. There was also coordination failure, given the level of Cameroon's economic development. The poor performance of the Cameroon economy was partly a result of the non-adherence to the financial discipline imposed by the exchange rate regime as well as the regime per se.

Overview of the Rest of the Book

This book is in five parts with twenty chapters. The rest of Part I, which contains Chapter 1, gives an overview of the volume. Much of the data used in the analysis (in some of the chapters) was collected around the mid-1990s. However, the conclusions drawn from those data will not be appreciably different than if more recent data had been used. Among other things, the basic structure of the economy generating the data has not fundamentally changed.

Part II deals with production issues in six chapters. These chapters examine the whole production structure of the economy and the reform process, with agricultural exports as the bulwark of the economy. In Chapter 2 Khan and Gbetnkom examine the export supply determinants of the three main agricultural crops in Cameroon: bananas, cocoa and coffee. In the international market for these crops, Cameroon is a price-taker, and the only way she can increase her export revenue is to increase her export supply. Assessing export supply determinants therefore becomes an important economic policy issue. The authors specify and estimate export supply functions for the three crops. The results show that while the relative producer price is important in influencing export supply of cocoa and coffee, the export price is not. As for bananas, the export price is important (no producer price variable is included). The non-price variables found to positively influence crop exports are road infrastructure, rainfall (for cocoa and coffee) and export credit. The international market influenced positively only the export supply of cocoa. Policy to increase export supply should therefore focus on helping farmers get a good reward for their crops, improving the road infrastructure and facilitating export credits to exporters.

Driven by the forces of globalization and the requirements of the Structural Adjustment Programme (SAP) adopted in 1988/89, the government's strategy leaned towards the promotion of exports. As analysed by Lydie Bamou and Ernest Bamou in, Chapter 3 this choice presupposes an increase of traditional exports and diversification towards non-traditional exports. The diversification becomes necessary because the country's export earnings are highly dependent on a limited number of products, and efforts to increase the volume of traditional exports are subject to both supply and demand constraints. With an increase in global competition, Cameroon has to examine its potential for non-traditional exports and ensure the necessary diversification of its exports.

The potential of non-traditional exports mainly tends to ensure the necessary export diversification in Cameroon. On the basis of the competitiveness and financial profitability indicators, nineteen non-traditional export products, among which fifteen are industrial and four agricultural, were identified as internationally competitive. This result is in line with the conclusions of previous research, which revealed the existence of a potential comparative advantage in the country's agricultural sector and the competitiveness of some of Cameroon's industrial products. The chapter further reveals that if the actual non-traditional export potential comparative advantage is well exploited, the country could benefit relatively from the market access opportunities offered by the ongoing globalization process.

In Chapter 4, Douya provides empirical evidence on how both price and non-price factors affect cotton supply response in Cameroon, and also differentiated farmers' behaviour towards cotton. Using panel data analysis, it is mainly demonstrated that since there is a variety of farmer profiles, no aggregate supply response exists for cotton. Variables that significantly impact on cotton supply vary both from the aggregate model to the sub-sample models. The main implication of such a result is that, with a view to improving cotton production, policy incentives may differentiate targets. To this end, the chapter shows that cotton-growing areas as well as ploughing systems are relevant criteria in defining these targets.

Chapter 5 on economy and reforms critically examines the relationship between Cameroon's economic growth and the reform process. Experience has shown that growth-enhancing policies, such as properly functioning financial markets and foreign exchange, foreign trade and openness, effective delivery of social services and an overarching rule of law, are highly conducive for economic growth and development. During the 1970s and 1980s, Cameroon had excellent revenue sources and opportunities for worthwhile investment expenditure in public goods and spending on those components that generate positive externalities, as well as creating cohesive and multiplier effects in such sectors as education, health and infrastructure. Yet, the record shows that the resources were not properly utilized. The different policies adopted so far have not been based on a solid theoretical foundation for sustainable development that is broad-based and conducive to the improvement of the people's welfare against the background of Cameroon's huge resource endowment and great potentials. Hence, Amin in Chapter 5 examines how these potentials can be transformed into sustainable development.

Chapter 6 is on the sources of Cameroon's economic growth. Amin examines the main components of Cameroon's growth rates between 1961 and 1997 and the driving force behind the sources of growth in the economy. In developed economies, studies show that total factor productivity growth plays a greater role than factor input growth. The results here suggest that factor inputs play more important roles than total factor productivity (TFP) growth, with emphasis on increasing return to scale and input growth both in quantity and quality. The technology factor is not a big contributor to growth in Cameroon, which may be related to certain constraints in the economy. The results do show a high growth rate in TFP, thus suggesting the potential and growing importance of TFP in the growth process. Policies that would improve the quality of factor inputs, particularly labour, would tend to enhance the contribution of TFP. Hence the policy implications are to improve human capital development as the main mover of other factors in the economy.

In Chapter 7 Njikam examines whether trade reform generates gains in productive efficiency in Cameroon's manufacturing industries. By pooling pre- and post-reform data, and estimating the stochastic frontier production function for each industrial sector, Njikam shows that trade reform promotes productive efficiency. In fact, empirical results reveal that the post-trade reform input elasticities are higher than the pre-trade reform ones. There are economies of scale after trade reform,

although increasing returns to scale are observed over both sample periods. The more open industrial sectors (in terms of import penetration and export shares) experience faster technical change growth. The post-trade reform firm-specific technical efficiencies increase on average at the rate of about 7.2 per cent while the pre-trade reform firm-specific technical efficiencies decrease on average at the rate of 2.5 per cent. Using Pearson and Spearman rank correlations gains in productive efficiency measures are robustly associated with increases in foreign competition. When macro variables such as political and macroeconomic instability are used to explain firm-level variations in technical efficiency, the positive effects of trade reform on productive efficiency become clearer.

In Part III, consisting of six chapters, social issues are discussed. The six authors in Chapter 8 investigate the multidimensional aspects of poverty in Cameroon, focusing on poverty profile. They use the 1996 ECAM data and monetary poverty with income or expenditures as a measure of welfare or standard of living. The established poverty lines are based on cost basic needs (CBN) from which different poverty profiles are constructed and sensitivity analysis is done. The 1996 poverty profile shows that the three dimensions (spread, depth and severity) of poverty are more prevalent in rural than in urban areas. Older people (more than 50 years old) are more affected by poverty than other age groups. It also shows that the larger the household size, the higher the poverty level. Another result indicates that men are more affected by the increase of poverty than women. This is an unusual result. In linking poverty with sectors of activity, the study shows that the informal sector has a higher spread, depth and severity of poverty than other sectors.

The poor also spend much less on education than the non-poor, and the poverty level decreases with the level of education. Yet the amount spent by the poor on health is much higher than that spent on education. Although the poor (mainly rural) own their houses, the quality of housing is not high. Significant variables determining the level of poverty include household size, family size and level of education.

In examining the determinants of poverty, in Chapter 9, Kamgnia and Timnou note that the state of poverty in Cameroon worsened from the second half of the 1980s, following unfavourable economic conditions. The country adopted the poverty reduction strategy paper (PRSP) from the last quarter of year 2000. Nevertheless, the implementation of such strategies requires additional studies and resources. Thus, based on the a priori conception of poverty as a phenomenon emanating from the combination of socio-economic factors that lead, among others, to exclusion, marginalization and inequality, the chapter identifies the leading contributing factors by categorizing the households into poor and non-poor groups. More specifically, for the food energy poverty, the chapter identifies as the main determinants of poverty in Cameroon a combination of household factors, notably household size and the age of the household head.

In Chapter 10, Tambi brings out ways in which the poor can supplement their food intake. He addresses the need for additional information on household demand for meat and fish in Cameroon. Probit analysis involving the Heckman selectivity

correction procedure is used to estimate the effects of individual and household characteristics on demand for beef, chicken, pork and fish. Results indicate that fish is a relative necessity in Cameroon and is often substituted for beef and chicken by households whose profiles include low income, large household size, middle-aged and less educated. Whereas chicken and pork can be substitutes, they are each complementary to beef. The profiles of households likely to purchase beef include being married, middle-aged, educated and of the Muslim faith. Profiles for households most likely to increase their purchases of chicken include being of a high income level and public sector-employed.

Since independence, the state has invested very heavily in Cameroon's educational system from nursery to tertiary level, with pressure brought on the government to privilege the primary level. In Chapter 11 Amin and Awung show that emphasis should be on all educational levels, and more so on the tertiary level. This conclusion is drawn from the earnings function model from which the chapter brings out the average rate of return to education with the marginal return referring to additional year of education at different levels. Liberalization in the education sector tends to pose serious problems in the internal performance of the education system. Nomba, in Chapter 12 demonstrates this clearly and his analysis outlines the structural and institutional problems. Within this framework a highly centralized educational management system linked to mismanagement of resources leads to many poor educational outcomes.

In Chapter 13, Ntembe explores the effects of public expenditure policy as an instrument for improving health care and health status of the population as measured by infant and maternal mortality. Using 1996 survey data, it is shown that prices charged may not affect health care utilization but individual incomes significantly affect the demand for health care. An inference from this result is that since the use of health care increases with incomes, there is overwhelming support for public expenditure to be targeted at low-income households. Also on the basis of the econometric analysis, public expenditure on cost-effective services is more efficacious in achieving better health outcomes than public provision of curative care, which the private sector is expected to provide efficiently.

Part IV also has six chapters in which the authors examine financial and fiscal issues. Chapter 14 discusses the failure of financial sector reforms in boosting lending to the private sector. Tawah, Amin and Ewane argue that this situation arose from several limitations, which include the absence of new and specialized banks, lack of competition between the banks, weak diversification of financial products, a poor information system, insufficient research capacity and an unfavourable environment for formal financial institution lending that led to the prevalence of high credit risk. The chapter contends that liberalization policies as applied to the financial sector have not been relatively successful and calls for further reforms that pay particular attention to the country's strategic sectors with strong growth potentials such as agriculture and small and medium-size enterprises. The authors propose a four-point policy to render the financial sector more responsive to the growing needs of the economy, and conclude that government intervention is crucial in providing the

necessary legal, supervisory and regulatory framework to promote much-needed growth in the country's strategic economic sectors.

The level of taxation varies across countries for many reasons including stage of development, availability of appropriate tax handles, sources of non-tax income and differences in tastes for public goods. The actual average tax ratio in Cameroon is 14.6 per cent as compared with an average of 22.7 per cent for Africa and 20.3 per cent for CEMAC (Economic Community for Central Africa) countries. Hence in Chapter 15 Agbor investigates the determinants of taxation in Cameroon by modelling the share of tax revenues in GDP as a function of real per capita income, the share of agriculture in income, the foreign trade share, the export share, the level of government expenditure, and the level of external public debt. The data used cover the period 1972–2002.

The results show that per capita income, the level of external public debt and the openness of the economy are important determinants of the level of taxation in Cameroon, with a strong negative effect for the level of external public debt on the tax level. From these findings, the author identifies three potential areas for additional revenue mobilization: the rationalization of the taxation on production and internal transactions, the exhaustiveness of value-added tax (VAT) and increase in its yield through reducing exemptions to the basic minimum. Also, reliance should be placed on improving the implementation of existing tax laws, broadening the tax base and strengthening the tax administration. These measures could mobilize much additional revenue without changes in existing taxes.

In Chapter 16 Baye and Khan examine the determinants of the real exchange rate (RER), the path of equilibrium RER and the degree of its misalignment in the Cameroon economy. The objectives are guided by the view that although Cameroon does not use its nominal exchange rate as a policy option, this may still influence its real exchange rate via other macroeconomic variables. The results indicate that the RER in Cameroon is mainly influenced by variables such as the terms of trade, trade policy, government consumption, long-term foreign debt, domestic credit and other macroeconomic policies. The RER was found to be near equilibrium in some periods and misaligned in other periods, experiencing both periods of RER overvaluation and undervaluation. The degree of overvaluation attained its peak in 1993 (47.85 per cent) – just before the 1994 devaluation.

The real exchange rate became slightly undervalued in 1994 and 1995 before becoming overvalued in 1996. A policy advice emanating from this study points to the importance of monitoring the RER. In this context, an understanding of the determinants of RER appears to be indispensable if the government intends to enhance the global competitiveness of the economy. RER management in Cameroon could require the manipulation of variables such as trade policy, government consumption, foreign debt and domestic credit.

Mbanga and Sikod discuss the impact of external debt on investment in Chapter 17. According to them debt service payments also rose dramatically over the same period, especially in relation to exports. Debt service constitutes a considerable share

of the budget, and so imposes significant constraints on domestic investments. The magnitude of the current debt and debt service payments is compounded by poverty and structural weaknesses in the economy. A satisfactory recovery of investment and output growth in Cameroon will remain difficult as long as the country is saddled with a burden of debt servicing that requires the transfer of a sizeable amount of resources abroad. Empirical evidence studies show that investment in many countries or regions cannot take place in the presence of a large debt and debt service burden because debt and debt-service payments affect investment through 'debt overhang' and 'crowding-out' effects. A necessary condition for economic growth and development is debt relief that goes beyond rescheduling. It should be debt cancellation.

Ernest Bamou discusses broader macroeconomic issues in Chapter 18. He uses a CGE model to analyse and compare the impact of the fiscal reform proposed in the UDEAC zone, now CEMAC, on the economic performances and welfare of the population of Cameroon, comparing it with Gabon. The scenarios carried out show that this reform has differing effects on the two economies. The alternative scenarios show that using the surplus fiscal revenue generated to increase public spending, which has a strong correlation with household revenue, can attenuate its negative effects on production and welfare. Following a decline in macroeconomic performance, particularly a sharp fall in production of the national economy in the early 1980s, Cameroon adopted in the late 1980s a new strategy of economic development within the framework of the structural adjustment programmes (SAPs) to replace its import-substitution strategy. The objective of these SAPs was to revamp national economies through efficient resource allocation.

In Chapter 19 Amin and Mbeaoh discuss the growth of the Cameroonian economy since the 1970s and draw attention to the fact that the informal economy expanded more rapidly than the whole economy. According to them the informal economy accounts for a significant proportion of the country's GDP. After taxonomy of the informal economy with a review of literature on the informal economy, they use two methods to estimate the size of the informal sector of the Cameroonian economy for the period 1975–2004. Based on the error correction model, these estimates are then used further to calculate the tax revenue that would have been obtained from the informal economy if it were officially taxed. Various ways are suggested of reducing the informal economy or bringing it into the formal economy.

Part V, with one chapter, concludes the volume. In Chapter 20 Amin stresses the need for the authorities to deliberately commit a sufficient share of the budget, with proper management, to infrastructure, human and institutional development.

Historical note

Cameroon was established as a German colony in 1884 and this status remained until the end of World War I, when the country was shared between French and British colonial powers. The French-administered region of the country attained self-government in December 1958 and subsequently was granted independence in

1960. The British protectorate of Southern Cameroon came together with the Republic of Cameroon under the French- and English-speaking Federation of Cameroon in 1961; the British protectorate of Northern Cameroon went with Nigeria. Ahmadou Ahidjo was the first president from independence until 1982 when he was succeeded by Paul Biya on 6 November 1982.

References

- Amin Aloysius Ajab, 1997, *Fiscal Policy: Wider Macroeconomic and Financing Links –Francophone Experience*, Final Report, Nairobi: AERC.
- Amin, Aloysius Ajab, 2002, *An Examination of the Sources of Economic Growth in Cameroon*, AERC Research Paper No. 116, Nairobi: AERC.
- Amin, Aloysius Ajab and Jean-Luc Dubois, 2000, *A 1999 Update of the Cameroon Poverty Profile: Reducing the Current Poverty and Tempering the Increased Inequality*, World Bank Country Paper, Washington, DC: World Bank.
- Aron, Janine, 2000, 'Growth and Institutions: A Review of Evidence', *World Bank Research Observer*, Vol. 15, No. 1, pp 99–135.
- Bijan, B. Aghevli and Peter J. Montiel, 1991, 'Exchange Rate Policies in Developing Countries'. In: Emil-Maria Claassen, ed., *Exchange Rate Policies in Developing and Post-Socialist Countries*, San Francisco: International Center for Economic Growth, ICS Press.
- Boote, Anthony R. and Kamau Thugge, 1999, *Allègement de la dette des pays à faible revenu: l'Initiative en faveur des pays pauvres très endettés*, Fonds Monétaire International, Série des brochures no. 51-F, Washington, DC : IMF.
- Edwards, Sebastian, 1997, *Openness, Productivity and Growth: What Do We Really Know?*, NBER Working Paper No. 5978, San Francisco: NBER.
- Elbadawi, Ibrahim and Raimundo Soto, 1997, 'Exchange Rates and Macroeconomic Adjustment in Sub-Saharan Africa and Other Developing Countries' *Journal of African Economies*, pp. 74–120.
- Griffin, Keith and John Knight, 1990, *Human Development and the International Development Strategy for the 1990s*, London: Macmillan.
- Knack, S. and P. Keefer, 1995, 'Institutions and Economic Performance: Cross Country Test using Alternative Institutional Measures', *Economics and Politics*, Vol. 7, No. 3, pp. 207–227.
- Lawrence, Peter and Colin Thirtle, eds, 2001, *Africa and Asia in Comparative Economic Perspective*, London: Palgrave.
- Mankiw, Gregory N., David Romer and David N. Weil, 1992, 'A Contribution to the Empirics of Economic Growth', *Quarterly Journal of Economics*, Vol. 107, pp. 407–37.
- M'bet, Allechi and Amlan M. Niamkey, 1993, *European Economic Integration and the Franc Zone: The Future of the CFA Franc After 1996*, Part I, AERC Research Paper No. 19, Nairobi: AERC.
- North, Douglass, 2000, *Institutions and Productivity in History*. <http://econwpa.wustl.edu:8089/eps/eh/papers/9411003.pdf> [April 2003]
- Nussbaum, Martha and Amartya Sen, eds, 1993, *The Quality of Life*, Oxford: Oxford University Press.
- PNUD, 1998, *Rapport sur le Développement Humaine au Cameroun*, Yaoundé: PNUD

- Qizilbash, Mozaffar, 1996, 'Capabilities, Well-Being and Human Development: A Survey', *Journal of Development Studies*, Vol. 33, No. 2, pp. 143–162.
- Ravallion, Martin, 1998, *Poverty Lines in Theory and Practice*, AERC Working Papers, Nairobi: AERC.
- Sen, Amartya, 1996, 'On the Foundation of Welfare Economics: Utility, Capability and Practical Reason'. In: Francesco Farina, Frank Hahn and Stefano Vannucci, eds, *Ethics, Rationality and Economic Behaviour*, Oxford: Clarendon Press.
- Solow, Robert M., 1956, 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics*, Vol. 50, pp. 65–94.
- Tchundjang, P.J., 1981, *Monnaie Servitude et Liberté: la répression monétaire de l'Afrique*, Paris: Edition Jeune Afrique Conseil.
- UNDP, 2002, *Human Development Report*, New York: UNDP.
- World Bank, 1998, *Cameroon: Diversity, Growth and Poverty Reduction*, Washington, DC: World Bank.
- World Bank, 2002, *World Development Report 2002*, Oxford: Oxford University Press.

2

Agricultural Export Supply Determinants in Cameroon's Economy

Sunday Khan and Daniel Gbetnkom

Background and Research Problem

The agricultural sector plays a very important role in Cameroon's economy, as is the case with many developing countries. Before Cameroon started exporting oil in 1978, the agricultural sector accounted for about 30 per cent of GDP and 80 per cent of total merchandise exports. The production and export of oil came from 1978 changed the whole economic situation. As early as four years after the start of oil exporting, in 1982, oil revenue already represented more than 41 per cent of all export earnings. By 1990, the share of agriculture in GDP had fallen to 24 per cent, and its contribution to export earnings had dropped to 53 per cent. Crude oil then replaced agriculture as the dominant foreign exchange earner and earned Cameroon about 300 billion CFA francs in 1991.

Despite this dismal performance of the agricultural sector from the 1980s, especially in terms of exports, it remains relatively important in the Cameroonian economy. It employs about 75 per cent of the active labour force, and 85 per cent of the total population derive their livelihood from this sector. A large part of domestic food production is provided by the agricultural sector thus saving foreign exchange earnings that would have been spent importing foodstuffs. This implies that for a long time to come Cameroon will continue to depend on its agricultural sector. This is further amplified by the fact that the industrial sector remains weak and has not expanded.

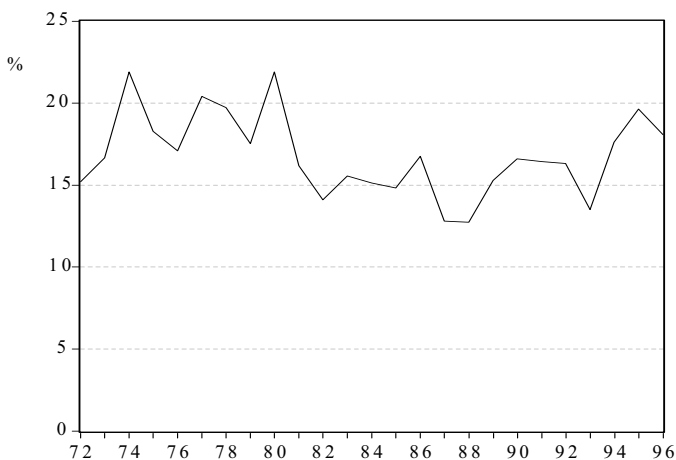
The strength of the agricultural sector derives principally from the export crop sub-sector, which is based on cocoa, coffee, cotton, timber, bananas, rubber, palm products and tobacco. The first three crops account for the lion's share of agricultural export earnings. Before 1978, they made up 88 per cent of agricultural export revenue, distributed averagely as follows: 28 per cent for cocoa, 55 per cent for coffee and 5 per cent for cotton. Their contribution declined slightly after 1987 to

81 per cent, with cocoa contributing 29 per cent, coffee 44 per cent and cotton 8 per cent (Gbetnkom 1996).

As mentioned, the performance of the agricultural sector has been a matter of concern for some time. The traditional agricultural export crops of cocoa, coffee and cotton have fared relatively less well than those on which the economy has not relied for so long, such as bananas. If we consider first total export earnings as a ratio of GDP (see Fig. 2.1), we see that performance has not been stable over the study period, fluctuating generally between 13 and 21 per cent.

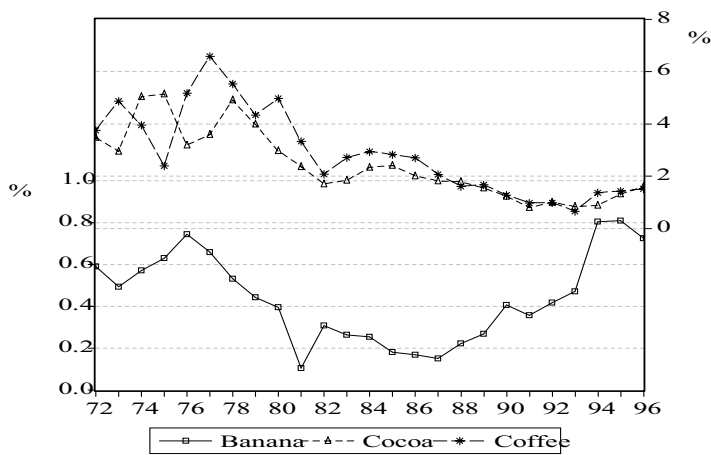
Looking at the individual crops (Fig. 2.2), the share of earnings of GDP for bananas fell up to the late 1980s and then started rising to reach a maximum of about 0.82 per cent in 1993/94. It started declining again when the export quota system came into force. The ratio of export earnings for cocoa and coffee had a similar trend. The maximum ratios were reached in the late 1970s (5.13 and 6.37 per cent for cocoa and coffee respectively). The fall that followed continued (and even went below 1 per cent) until the 1994 devaluation and a fall in the share of crude oil (resulting from falling oil prices). It is therefore apparent that the stagnating and almost declining share of export earnings in Cameroon's GDP was substantially owing to the falling revenue of cocoa and coffee. The picture is not markedly different when we examine the ratio of the export revenue of individual crops to that of total export revenue, as presented in Fig. 2.3.

Figure 2.1: The Evolution of Export Earnings as a % of GDP (1971/72 - 1995/96)



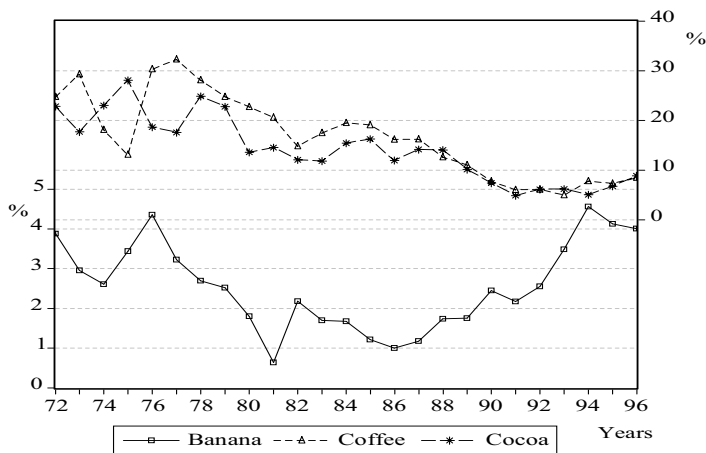
Source: Author's calculations.

Figure 2.2: The Evolution of Coffee, Cacao and Banana Export Earnings as a % of GDP (1971/72 - 1995/96)



Note: On Figure 2.2, we have used a dual-scale in order to show the full variation of each of the series. Banana is measured on the left scale, while coffee and cocoa are measured on the right scale. Source: Author's calculations.

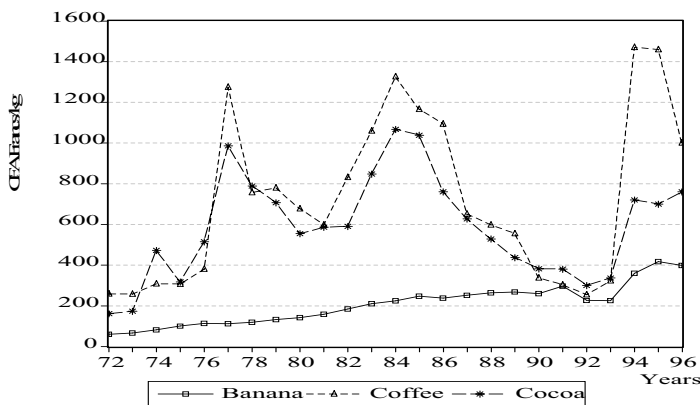
Figure 2.3: The Evolution of Coffee, Cocoa and Banana Export Earnings as a % of Total Export Earnings (1971/72 - 1995/96)



Note: This Figure has a dual-scale to show the full variation of each series. Banana is measured on the left scale while coffee and cocoa are measured on the right scale. Source: Author's calculations.

The poor performance of Cameroon's agricultural exports can be explained by a number of factors, both sector-specific and economy-wide (Amin 1996; Njinkeu 1996): an overvalued exchange rate coupled with skewed trade and pricing policies in the sector, with high taxation rates both explicitly and implicitly. Consequently producers received only 50 per cent or less of the free on board (FOB) price of their crops, the prices of agricultural exports declined relative to those of non-tradable goods (shifting resources away from the production of exportable goods), and importable goods were highly protected relative to those for export. Such policies made Cameroon's agricultural crops less competitive in the world market and affected the volume of exports. The declining export revenue from agricultural crops can also be attributed to unstable and declining world prices in these export crops especially after 1984. For instance, the world price of robusta coffee fell from 1,326 CFA francs per kg in 1983/84 to an all-time low of 254 CFA francs per kg in 1991/92. As for bananas, the world price has maintained a steady rise, despite the small break in 1990/91. This explains the better export performance of this crop vis-à-vis cocoa and coffee. The evolution of these prices is shown in Fig. 2.4.

Figure 2.4: The Evolution of Export Prices of Coffee, Cocoa and Banana (1971/72 - 1995/96)



Source: Author's calculations.

It is therefore clear that Cameroonian agriculture has been deficient, especially in terms of exports. This has been particularly the case with cocoa and coffee whose export shares in GDP and in total export revenue have been on the decline. This has become quite an important problem because, before the exploitation of oil, these crops were the main foreign exchange earners for the country. With the production and export of crude oil, the significance of these crops started declining and the gap was filled by oil revenue. But the unstable and declining prices of oil have meant falling oil revenues, with consequent effects on the economy. It provides further proof that Cameroon cannot depend on oil exports and let its agricultural sector

decline. The agricultural sector not only provides revenue, it also employs a large majority of the active population (which the oil sector cannot absorb), as well as providing food for the nation and saving foreign exchange expenditure. Furthermore, oil is a depletable resource. This has even been more disturbing as world trade in these crops has been growing. Between 1971 and 1990, world trade in cocoa and coffee grew at a rate of 2.3 and 1.6 per cent respectively (Lukonga 1994:3). This implies that Cameroon's market share of these products has equally been declining, which is an additional indication of poor export performance.

Against this background, knowledge of the factors that determine the export supply of Cameroon's agricultural products becomes very necessary. Given that Cameroon is a price-taker in the market for her agricultural crops, the only way she can increase her export earnings is to increase export supply. This implies the implementation of an efficient supply-oriented policy. This is only possible if policy-makers can identify the determinants of agricultural exports and hence design policies to promote their supply.

Objective of this Chapter

The objective of this chapter is to identify the factors that determine Cameroon's agricultural export supply. More specifically, we will specify and estimate an export supply function for each of the crops under study. This should enable us to identify the peculiarities of each of the crops that an aggregate analysis would conceal.

The Market Structure of the Commodities

The marketing of cocoa and coffee in Cameroon was for many years under the auspices of the National Produce Marketing Board (NPMB) whose duties among others included the purchase and export of the produce, quality control, input supply to farmers and the stabilization of producer prices. Licensed buying agents and co-operatives undertook local purchasing from farmers. They then delivered the produce to the NPMB for onward export. This regulated system of marketing generated a number of problems such as: farmer prices that were significantly lower than world prices, delayed payments to licensed buying agents and consequently to farmers, and increased unavailability and untimely production of inputs. These shortcomings led to the liberalization of many functions of the NPMB with the onset of the structural adjustment programme (SAP) in 1988. Producer prices of cocoa and coffee were partially linked to world prices and, in 1990, both domestic and export marketing activities were deregulated. This culminated in the replacement of the NPMB by the Cocoa and Coffee Board (CCB) in 1991. Abandonment of producer price fixing by the government followed in 1994. This marked a giant step towards the complete liberalization of the sector.

A greater part of the cocoa and coffee produced in Cameroon is exported. A small quantity is processed locally by companies like CHOCOCAM and SIC-CA-CAO (for cocoa) and UCCAO (for coffee). The international marketing of these crops has been under the auspices of the International Cocoa Organization (ICCO)

and the International Coffee Organization (ICO). The ICCO was created to stabilize a usually volatile cocoa market on the basis of an agreed price range. It relied on the system of buffer stocks to ensure price stability even though an export quota system was previewed from the onset. Cocoa was purchased for the buffer stock for a number of years, and by the 1993 agreement, all active stabilization measures were abandoned. In terms of coffee, the ICO used the export quota system to stabilize prices. This worked for a number of years but was terminated in 1989 following a number of problems, among which were the activities of non-members whose actions were not constrained by the international coffee market. While this quota system was highly restrictive for some member countries, this was not the case for Cameroon, which for most of the years of the system exported less than her allotted quota.

As regards bananas, the national market structure was dominated by the CBO (Organisation Camerounaise de la Banane) up to 1987 when it was dissolved as a result of declining banana output. The banana sector was restructured as bananas increased in importance, both as a food as well as an export crop. This led to a number of multinational firms implanting in the sector and producing mainly for the export market. Essentially small farmers supplied the local market. Another grouping, ASSOBA CAM (Association des Bananeraie du Cameroun) was created in July 1987 to cater for the interests of export growers. Today, the export market is dominated by ASSOBA CAM and CDC, while the local market is supplied by small producers.

The international marketing of bananas is dominated by a long-running dispute between the African, Caribbean and Pacific (ACP) countries and the EU on one hand, and Latin American banana producers and the USA on the other – the famous banana war. According to the accords of the Lomé Convention linking ACP countries to the EU, ACP banana exports retain preferential access (duty free) to the EU market. The USA and her Latin American partners strongly object to what they term trade discrimination, and point out it is contrary to World Trade Organization (WTO) trade principles. The EU has been forced to impose a quota system on ACP bananas since 1993 (although still duty free) so as to allow a share of the market (2.7 million tonnes at 20 per cent duty) to Latin American producers. The banana war continues, as the USA pushes for nothing short of a complete liberalization of world banana trade. If this were to be the case, as seems inescapable given the strength of globalization, then ACP bananas might be driven out of their traditional market (the EU) because of its position of comparative cost disadvantage. As an example, the cost of a tonne of bananas is \$US245 in Latin America, and \$US333 in the ACP countries. This cost is even higher in Cameroon at \$US354 (Marché Tropicaux 1996). With the quota system now in place, Cameroon has often exported less than her export capacity, as in 1996, when the exportable quantity was 250,000 tonnes but Cameroon's export quota was just 162,000 tonnes.

Literature Review

The increasing popularity of the policy of openness to the external world or, more specifically, the impact of international trade in the development process, has led to

numerous theoretical and empirical studies. Though the direction of causality between economic growth and exports earnings remains controversial, there is a relatively strong positive correlation between export and real income growth across the Sub-Saharan African (SSA) countries (Svedberg 1991). Export orientation has been credited for the phenomenal transformations of the East Asian economies over the last thirty years, as well as for other more recent remarkable economic successes in other regions, such as Chile (Elbadawi 1998). Balassa (1990) and Edwards (1993) have postulated that there was agreement among a large segment of the economics profession that countries that have relied on 'outward oriented' development strategies have done better over the medium and longer run than the 'inward looking' ones.

For most less developed countries (LDCs), exports are essentially made up of primary agricultural products. The terms of trade of these products in the world market after World War II created an atmosphere of export pessimism, which characterized the thinking of most influential development economists and policy-makers in the developing nations. According to the pioneers of that Pessimist School of Thought, the absorptive capacity of foreign markets was too low to accommodate imports from developing countries on a sufficient scale as less developed nations accelerated their development. The other argument supporting this way of thinking was related to the fact that export performance of developing countries was dependent on the growth rate of industrial production in the developed countries. On the other hand, other authors have shown that such stable relationships as suggested above (which imply the exclusive dominance of demand in determining trade performance) do not characterize the export experience of developing countries in the post-1945 period. Rather, export performance should be explained by domestic incentives (or supply) more than by external (or demand) conditions. However, the economic crisis of the 1980s, the sluggish world economy and the continuing depression of primary product prices combined to revive export pessimism.

For a single country (like Cameroon) that is not a dominant supplier of an export crop, increased exports can be absorbed with no measurable fall in the market price. The country will thus increase its export earnings. A small supplier of primary products in the world market faces an infinitely elastic foreign demand for the crops it produces for which changes in foreign demand influence exports only through changes in world prices. In this respect, increasing the supply of agricultural exports becomes the main focus for most non-oil developing countries and a way of assuring a harmonious transition towards industrialization. Agricultural export supply responsiveness is so important that numerous empirical studies have focused on this question over the last two decades (e.g. Fosu 1992; Adubi and Okunmadewa 1996; Kwanashie et al. 1997; Lukonga 1994; Balassa 1990; Gerrard et al. 1993). The virtually unanimous conclusion of these studies is that agricultural exports in LDCs are responsive to price variables

In Cameroon, to our knowledge, only the work of Amin (1996) has attempted to model the determinants of agricultural export supply. He first estimates the effect of the real exchange rate (RER) on prices of export crops and on Cameroon's

agricultural export competitiveness. After calculating the nominal protection coefficient, the nominal protection rates for the crops considered (cocoa and coffee) and estimating the real exchange rate and the extent of the overvaluation, he concludes that the agricultural sector is overtaxed through a high level of intervention and RER overvaluation. The response of cocoa and coffee exports to foreign income was fairly elastic for cocoa, and not for coffee. Most of the variables included in the model were not statistically significant, and Amin did not distinguish between export supply and export demand variables. The model performed quite poorly in terms of the coefficient of determination (0.29 for cocoa and 0.19 for coffee).

Beyond Cameroon, many studies have investigated the performance of the agricultural export sector during the last two and the half decades. In one such study, Fosu (1992) estimates export supply functions for aggregate agricultural export and three individual crops, including cocoa and coffee. He starts by noting that the RER does not influence the economy's agricultural export directly but rather by its effects on the incentive structure. He finds the following variables significant in affecting export supply for various crops in Ghana: the relative export price, production capacity, income of importers (with a negative sign) and a lagged export supply term. He concludes that there is need to supplement price policy with a non-price policy, such as improvement of the road infrastructure in order to boost export supply. In another study, Lukonga (1994) examines the factors underlying the past performance of Nigeria's non-oil exports. He considers three crops including cocoa. The relative price term (among other variables) is significant, especially for cocoa. His results once more provide evidence of the usefulness of pricing policy in eliciting export supply. Arguing against these two studies mentioned above, Islam and Subramanian (1989), examining the agricultural exports of developing countries, emphasize the relatively insignificant role of price as compared to non-price factors in explaining export supply. In d'Ivoire, Trevi and Akiyama (1992) find that while coffee is highly sensitive to price factors, cocoa is not.

The present study combines both price and non-price factors in an attempt to explain the behaviour of agricultural export supply from Cameroon. Many variables are included, and quantitative measurements will permit us to establish where government leverage is likely to be greatest in order to reverse the downward trend of agricultural export earnings observed during the last decade.

Methodology

This study attempts to assess the determinants of Cameroon's agricultural export crops. Export supply functions will be specified and estimated for the three export crops: cocoa, coffee and bananas.

Model Specification and Explanation of Variables

The export supply models for the various crops will be modelled on the basis of studies by Goldstein and Khan (1978), Bond (1985), Islam and Subramanian (1989) and Lukonga (1994).

Coffee

The export supply function of coffee is specified implicitly as follows:

$$X^s_t = f(RPP_{t-3}, RPX_t, XC_t, RNF_t, X^s_{t-1}, RD_t, DTD_t, DPF_t, DICA_t) \quad (1)$$

where: X^s	=	is export supply measured in tons
RPP	=	the ratio of the producer price to the domestic price index
RPX	=	the ratio of the export price to the producer price
XC	=	agricultural export credit
RNF	=	average annual rainfall in millimetres
RD	=	classified road network
DTD	=	dummy variable for deregulation of both domestic and export marketing activities, which takes the values 0 for years prior to deregulation and 1 thereafter
DPF	=	dummy variable for abandonment of producer price fixing, which takes the value 0 for period of price fixing, and 1 afterwards
DICA	=	dummy variable for ICA quotas, which takes the values 0 for years when quotas were not in force and 1 for years of ICA quotas

RPP tries to model the behaviour of Cameroon's coffee farmers. It is given as the ratio of the producer price (in local currency) to a measure of the domestic price index, which is approximated here by the consumer price index (CPI). This domestic price index is intended to reflect changes in the cost of producing the export crop. If this cost increases in relation to what the farmer receives in selling his crop, the profitability of producing the export crop will fall. Also, given that the resources used in the production of export crops can equally be used for other purposes, the relative profitability of producing export crops falls with an increase in domestic prices. This relative price term is lagged three times to reflect the lag in adjustment of export supply to changes in producer prices. The three lags indicate the three-year gestation period for coffee. Lukonga (1994) did a similar specification, though lagging prices by only one period. We expect a positive relationship between export supply and the relative producer price variable.

The second price variable (RPX) measures the behaviour of exporters. It is expressed as a ratio of the export price and what is paid to farmers (the producer price). The price paid to producers represents a cost to exporters. If this cost increases in relation to the export price, it becomes less profitable to export. If the export price increases more than the producer price, more will be bought from the farmers for the world market. We expect a positive coefficient. In this coffee export supply model, we treat both relative price terms as exogenous, because, first, the price received by farmers for their coffee was fixed by the state, and second, Cameroon's share in the world market of coffee is not sufficiently large to influence world prices. As already mentioned, Cameroon maintains an average of about 2.8 per cent (*FAO Trade Yearbooks*) of the world coffee market. She has therefore been a price-taker and the 'small' country assumption holds for her coffee export activity.

Export credits (XC) are understood to be an important variable in explaining export supply. Towards the end of each crop season, special credits are put at the

disposal of exporters to enable them to buy the coffee and cocoa crop from the farmers. This has been an important component of government policy to promote the export of primary products. Exporters were therefore given loans on preferential terms. The coefficient of XC is expected to be positive because the larger the magnitude of credits disbursed, the greater the possibility of increased export volume.

The road infrastructure variable (RD) tries to measure the effect the 'classified' road network has on agricultural exports. In Cameroon, the government divides the road network into classified and non-classified. The classified network comprises both paved and unpaved roads. The government pays more attention to these roads, and even the unpaved surfaces are practicable for a larger part of the year. An increase in the network of classified roads should have a positive effect on crop transportation to the port of exit. We expect a positive relationship in that more classified roads should facilitate export supply.

Agriculture in Cameroon is essentially rain fed (RNF), especially in the southern part of the country where the crops considered in this study are cultivated. This excludes crops like bananas and pineapples, which are irrigated during the dry season. Low production has partly been associated with drought years. Export supply is then positively influenced by rainfall. A one period lag of export supply (X_{t-1}) has been included as a regressor in the export supply function. This assumes some lags in export supply adjustment (Goldstein and Khan 1987; Lukonga 1994). A positive coefficient is expected.

We use two dummy variables here to assess the impact of the domestic marketing structure on the export supply of coffee and cocoa. The first dummy variable (DTD) is meant to capture the effect of the deregulation of domestic and export marketing activities in the cocoa and coffee sub-sectors in 1990. The second dummy (DPF) tries to assess the impact of the abandonment of the fixing of producer prices in 1994 by government institutions. These policy changes were under the general framework of the SAP adopted by Cameroon in 1988. They were both intended to liberalize trade in these crops so as to increase output and export, and equally allow a better remuneration for those involved in the sub-sectors, especially farmers. Both DTD and DPF are expected to positively influence export supply.

Another dummy variable ($DICA$) is also included to capture the effect of the ICA quota regime (that is, the international marketing structure), which constrained coffee exports with the objective of stabilizing coffee prices. ICA quotas started in 1963 and ended in 1989, with suspensions in 1972 and 1987. The ICA dummy is expected to have a negative coefficient showing how the quotas constrained Cameroon's exports.

Cocoa

The export supply model for cocoa is specified as follows:

$$X_t^s = f(RPP_{t-3}, RPX_t, XC_t, RNF_t, X_{t-1}^s, RD_t, DTD_t, DPF_t, DICCA_t) \quad (2)$$

where:

- $DICCA$ = dummy variable for ICA buffer stocks which takes the values 0 for years when buffer stocks were not constituted and 1 for years of buffer stocks.
- The other variables apply as above.

As under the coffee model, the relative price terms for cocoa are expected to have similar effects on the export supply of cocoa. RPP is lagged three periods to take care of export supply adjustments to producer prices, depending on the gestation period of the cocoa bush, which is three years. Here, we equally make the 'small' country assumption, as Cameroon's cocoa exports were not large enough to influence world prices. Her average market share is about 5.5 per cent (FAO Trade Yearbooks). The relative price variables are therefore treated as exogenous in the cocoa model.

The International Cocoa Agreement dummy (ICCA) tries to capture the effects of the buffer stocks constituted by the International Cocoa Organization (ICCO) in its attempt to stabilize cocoa prices. The ICCO started buying cocoa from members to constitute the buffer stock in 1980/81. This continued to 1987/88. The buffer stock policy did not constrain export supply of cocoa as was the case with the ICA coffee quotas. Any excess supply in the market was bought by the ICCO. We therefore expect a positive relationship between the dummy and the export supply of cocoa.

The other variables in the cocoa export supply model play the same role as in the coffee model. Cocoa and coffee are the main export crops in Cameroon and the government has usually applied similar policies for the two crops. This is the case for the following variables: XC, DTD, DPF, RD and RNF.

Bananas

The export supply model for bananas is specified as follows:

$$X_t^s = f(RPX_{t-1}^s, X_{t-1}^s, RD_t, XC_t, RNF_t, DRES_t, DBM_t) \quad (3)$$

where:

- DRES = dummy variable for the restructuring of the banana sub-sector. It takes 0 before restructuring, and 1 thereafter
 - DBM = dummy variable representing years of the quota system imposed on ACPbananas entering the EU. It takes the value 0 before the institution of the quota, and 1 thereafter.
- All other variables are defined as above.

The relative price term is lagged by one period, indicating that export supply takes one year to respond to any increases in export price. That is a year's gestation period for the banana plant. The 'small' country assumption applies equally to the export of bananas. Cameroon's share of the market according to FAO statistics is around 1 per cent. This implies that Cameroon cannot influence the export price of banana, which is thus treated as an exogenous variable.

The dummy variable (DRES) is expected to pick up the restructuring of the banana sub-sector in 1988. This involved the dissolution of the parastatal OCB (Cameroon Banana Organisation), which hitherto oversaw both the production and export marketing activities of Cameroon's banana crop. This restructuring, which removed the state monopoly in the sub-sector, raised output from 37,974 tonnes in 1988 to 250,000 tonnes in 1996. We thus expect a positive coefficient for restructuring.

The other dummy (DBM) variable in the banana export supply function tries to take into consideration the functioning of the international banana market. Starting from 1993, ACP countries (including Cameroon) were allotted export quotas to their traditional banana market (the EU). We expect this variable to have a negative effect on export supply since Cameroon was forced to export less than her export capacity. The effect of the other variables on the export supply of bananas is the same as for cocoa and coffee.

Estimation Method

In this sub-section, we examine the time-series characteristics of the variables to be modelled, testing for stationarity and co-integration of the variables in all the equations under consideration.

Unit Root Tests

We need to know the underlying process that generates our time-series variables, that is, whether the variables are stationary or non-stationary. Non-stationary variables might lead to spurious regressions. In this case the results may suggest a statistically significant relationship between the variables in the model, when in fact this is just evidence of contemporaneous correlation. We have used the Augmented Dickey Fuller (ADF) and the Phillips Perron (PP) tests to examine our variables for the presence of a unit root.

The ADF test assumes that the data-generating process is autoregressive to the first order. This is done so that the autocorrelation in the error term does not bias the test. The ADF includes first-difference lags in such a way that the error term is distributed as a white noise. The test is formulated as follows:

$$\Delta y_t = \alpha + \rho y_{t-1} + \sum_j \gamma_j \Delta y_{t-j} + \varepsilon_t \quad (4)$$

A unit root test implies testing the significance of ρ against the null that $\rho = 0$.

The Phillips Perron (PP) test for its part addresses the problem of the unknown structure of the data-generating process under the null hypothesis by adjusting the t-statistic for the potential omitted variable bias *ex post*. The PP test is formulated as follows:

$$\Delta y_t = \beta + \rho y_{t-1} + \mu_t \quad (5)$$

To test for a unit root, the above equation is estimated by OLS, and the t-statistic of ρ is corrected for serial correlation. If the results of the unit root tests show that the variables are not stationary in their levels, we proceed with a co-integration analysis.

Co-integration Analysis

In a regression involving non-stationary variables, spuriousness can only be avoided if a stationary co-integrating relationship is established between the variables. Therefore, if two or more variables can be linked to form an equilibrium relationship spanning the long run, then even though the variables themselves may contain

stochastic trends they will nevertheless move closer over time and the difference between them will be stable. To test for co-integration in this chapter, we run our regressions and use the ADF and the PP unit roots test to test for the stationarity of the residuals. If the residuals are stationary, then we conclude for co-integration of series used in the model (Adam 1993; Perman 1989).

Sources of Data

The main data source was the Department of Statistics and National Accounts. Information was obtained from the following documents it publishes: *Cameroon in Figures*, Annual Statistical Reports and National Accounts documents. Other sources included the Cocoa and Coffee Board (which holds the archives of the defunct National Produce Marketing Board), the Departments of Statistics and Agricultural Surveys of the Ministry of Agriculture and ASSOBA CAM (data on bananas). The National Meteorological Department provided information on the weather. Supplementary data was obtained from publications of the Bank of Central African States (BEAC), the World Bank, the International Monetary Fund, FAO Trade Yearbooks and the UNTAD Monthly Bulletin of Trade Statistics.

Empirical Results

Unit Root Tests Results

Table 2.1 reports the results of the ADF and the PP tests for the order of integration of our variables.

Table 2.1 Unit Root Tests Statistics

Variables	Levels		First Difference	
	ADF	PP	ADF	PP
log(X ^s _{cc})	-1.1488	-2.5930	-3.6517	-8.7668
log(X ^s _{cf})	-2.6336	-4.3443	-4.9999	————
log(X ^s _{bn})	-1.4193	-0.7676	-3.4709	-3.1008
log(RPP _{cc})	-0.9930	-0.9901	-3.2851	-3.9593
log(RPP _{cf})	-1.9329	-1.8425	-3.1106	-3.7306
log(RPX _{cc})	-1.5225	-1.7264	-3.6844	-5.8765
log(RPX _{cf})	-2.2563	-2.4160	-4.2812	-4.0793
log(RPX _{bn})	-2.3771	-1.9637	-5.1700	-4.8126
log(RNF _{cc})	-4.5223	-4.3703	————	————
log(RNF _{cf})	-3.4864	-4.0473	————	————
log(RNF _{bn})	-4.7941	-4.5594	————	————
log(XC)	-1.8832	-1.7027	-3.0877	-2.7075
log(RD)	-4.5512	-7.0538	————	————

Note: The subscripts cc, cf and bn refer to cocoa, coffee and bananas respectively. The variables are as defined in the equations above.

Source: Author's calculations.

After comparing the ADF and PP statistics in Table 2.1 with the MacKinnon critical values provided by the Eviews econometric package, we came to the following conclusions concerning the unit root tests. Most of the variables are not stationary in their levels, implying the non-rejection of the null hypothesis of non-stationarity. But they all become stationary in their first differences. This means that they have only a single unit root. A number of variables (X_{cp}^s , RNF_{cc} , RNF_{cf} , RNF_{bn} , RD) are stationary in their levels. We cannot therefore specify the export supply models in their levels without the risk of obtaining spurious regressions except where they are co-integrated. It is therefore necessary to carry out a co-integration test.

Co-integration Test Results

As mentioned, we ran our regressions and tested the residuals for the presence of unit roots. The results as presented in Table 2.2 for the export supply functions of the three crops reject the null hypothesis of no co-integration. The ADF and PP statistics presented in the table are significant for all the crops.

Table 2.2: Results of Co-integration Tests

Crop	ADF	PP
Cocoa	-4.2708	-3.9280
Coffee	-4.7685	-5.9261
Banana	-4.0620	-6.1015

Source: Author's calculations.

Regression Results

We have used the ordinary least squares estimation procedure to obtain the export supply determinants of the three crops under study. The results of these estimates are presented in Table 2.3. They meet our expectations in terms of their signs, as all but one have the expected signs. This is not the same situation in terms of their levels of significance.

The relative price terms have the right signs for all the crops. The producer price appears to be important in determining export supply, as its coefficient is significant in both the cocoa and coffee supply functions. On the contrary, the relative export price has no significant effect on the export supply of the two crops. This implies that it is what farmers get for their crops and not exporters that determine the amount of each crop that is exported. Cocoa and coffee export supply responds to changes in relative producer prices, with a lag of three years. Banana export supply responds significantly to changes in the relative export prices,¹ but with a one-year lag. The price elasticity of all the crops is less than unity, implying a limited response by export supply to relative price changes. This can be attributed to the price-constraining nature of the international markets for these crops. The roles of the ICO, ICCO and the ACP–EU conventions for coffee, cocoa and bananas respectively

reduced the importance of the price mechanism in determining prices in these markets. Lukonga (1994) obtained more significant estimates for cocoa and rubber in Nigeria, though the coefficient of palm kernel was non-significant and negative.

Table 2.3: Export Supply Functions of the Different Crops
(quantity exported as the dependent variable)

Variables	Cocoa	Coffee	Bananas
Constant	3.01** (2.65)	2.33 (0.91)	8.60** (2.67)
logRPP(-3)	0.48* (3.02)	0.62** (2.59)	-----
logRPX	0.14 (1.69)	0.32 (1.54)	-----
logRPX(-1)	-----	-----	0.43*** (1.79)
logRD	0.19*** (1.97)	0.42** (2.38)	0.32 (1.39)
logXC	0.73*** (1.80)	0.32* (3.16)	0.20*** (1.88)
logX(-1)	0.12 (0.72)	0.19 (1.01)	0.59* (3.73)
log(RNF)	0.18*** (1.90)	0.24*** (1.89)	0.21 (1.38)
DTD	0.40*** (1.99)	0.44*** (1.93)	-----
DPF	0.13 (1.03)	-0.25 (-0.75)	-----
DRES	-----	-----	0.37* (3.08)
DICCA	0.25** (2.80)	-----	-----
DICA	-----	-0.13 (-1.64)	-----
DBM	-----	-----	-0.22 (-1.43)
R-squared	0.74	0.72	0.94
Adj. R-squared	0.66	0.58	0.92
LM statistic	1.41	1.26	1.31
F- statistic	6.44*	4.45**	39.36*

Note: *, ** and *** imply significance at the 1, 5 and 10% levels. Respectively; t-statistics are in parentheses.

Source: Author's calculations.

The variable representing the influence of the road network on export supply has the expected sign for all the crops but is significant only for cocoa and coffee. Cocoa and coffee are cultivated in the hinterland where the road infrastructure is poorly developed. In the rainy season, this poses a serious problem to the transport of these products to the port of exit in Douala.

Any improvement in the road network (increase in the number of classified roads) therefore has a positive effect on the export supply of these crops. On the contrary, most of the banana plantations are located not far from the port of exit. Most of the roads linking the plantations and Douala are classified. This might explain why changes in the nature of the road network do not significantly affect the export supply of bananas. But, as the drive to increase the output of this crop continues, more plantations will have to be opened farther away from Douala. This implies that the state of the road network will become an important factor for bananas as well.

Export credits appear to have a significant and positive influence on the export supply of all the crops. Although with inelastic coefficients, it underscores the importance of export credits to export supply. This variable might not play a similar role today with the liberalization of the banking sector, since exporters of these agricultural crops no longer benefit from loans on preferential terms on government instructions. But it is not ruled out that most of the exporters still negotiate for loans on good terms, since most of their borrowing is for a short term, normally not more than a year.

The coefficient of lagged exports has the expected sign, but is significant only for bananas. This implies a low degree of dynamic adjustment of lagged export-to-export supply of cocoa and coffee. Following Goldstein and Khan (1978), we obtain the average time lag for adjustments of exports to changes in the independent variables² as 1.14, 1.23 and 2.44 years for cocoa, coffee and bananas, respectively. Lukonga (1994:14) obtained 1.38 years for cocoa and 1.61 for palm kernel in Nigeria.

Cocoa and coffee almost entirely depend on rainfall for their growth. This is not the same situation with bananas, where the big firms use more sophisticated means (including computers) to monitor the level of water in the soil. They dig trenches to enable the soil to release excess water and use giant pumps for irrigation when the water level in the soil is low (especially in the dry season). It is therefore not surprising that while cocoa and coffee are significantly influenced by rainfall, banana production is not.

Three dummy variables represent specific policy changes implemented in the framework of the SAP. The dummy for the deregulation (DTD) of domestic and export marketing of cocoa and coffee is significant. This is not the same result for the dummy representing abandonment of producer price fixing (DPF). None of the coefficients is significant (for both cocoa and coffee). This can be attributed to the fact that our study includes only three years (1994 to 1996) of market-determined prices. During this period, the system was still not well understood by market participants after many years of price imposition by the government. The dummy for the restructuring of the banana sub-sector (DRES) is significant at the 1 per cent level. This implies that the restructuring had very far-reaching effects on production and consequently on banana export. Fosu (1992) (using SAP as an overall dummy) found it significant for coffee, but not for cocoa and peanuts. Using a similar method, Lukonga (1994) found significant results for cocoa and rubber in Nigeria, but not for palm kernels.

The functioning of the international markets of cocoa, coffee and bananas has been measured by dummies: DICCA, DICA and DBM. The International Cocoa Agreement dummy had a positive and significant effect on cocoa export. This is understood in that the agreement led to the purchase of excess cocoa so as to prevent prices from falling below an agreed level. It did not constrain export supply. Members however bore the cost of the buffer stock, as they had to be levied for the stock to be constituted. On the other hand, the International Coffee Agreement dummy is not significant. This is not surprising because Cameroon quite often exported less than her ICO quota. The dummy for Cameroon's banana export quota to EU has the expected negative sign, but is not significant, despite the fact that Cameroon has been exporting less than her capacity to the EU, her main market.

Generally, the models performed well, especially in terms of the expected signs. However, in respect of coefficient significance, some of our expectations were not met. The adjusted coefficients of determination show that the variables included succeeded in explaining at least 58 per cent (adjusted R-squared) of the variation in export supply. This coefficient for banana was quite high (92 per cent). Amin (1996) had adjusted R-squared of 0.29 for cocoa and 0.19 for coffee in Cameroon. Our model therefore offers a better explanation of export supply in Cameroon. The F-statistics for the overall significance of the regressions are also significant. To test for serial correlation, we have used the Breusch–Godfrey–Lagrange Multiplier (LM) test (Maddala 1988:206–7) instead of the Durbin–Watson (DW) test. This is because the DW test is not applicable if explanatory variables contain lagged dependent variables, as is the case in this context. Also, the DW test is a test only for first-order serial correlation. The LM test is a general test, which overcomes all these obstacles. The LM statistics as given in Table 2.3 show that the null hypothesis of serial correlation has been rejected (judging from the probability values provided by Eviews) as none of the statistics is significantly different from zero.

Conclusion

This chapter has attempted to assess the determinants of export supply of three agricultural crops in Cameroon: cocoa, coffee and bananas. The rationale has been that Cameroon, as a price-taker in the market of these crops, has only one way of increasing her export revenue, namely by increasing her export supply. The results show that producer prices and not export prices are important in driving the export supply of cocoa and coffee. It is only in the case of bananas that export prices are important (especially because of no producer prices). An improvement in the road infrastructure will have a positive effect on the supply of crops for export. Equally, more credits to crop exporters will facilitate the purchase of the crops from farmers and thus increase exports. The SAP dummies show a positive effect for the policies implemented: market deregulation, restructuring of productive activities and market-determined prices. Export supply is also driven by natural factors, such as rainfall in the case of cocoa and coffee.

The implications of this study are that any attempts to improve the export supply of agricultural crops in Cameroon should focus, first, on letting the farmers get a satisfactory reward for their efforts, and second, making more credits available to exporters (this will have to be at the personal initiative of the exporters since the government has disengaged from the sector, but it should not be too difficult since these could be short-term loans). Third, the road network should be improved so as to facilitate the transportation of crops to the port of exit, and finally, the liberalization of the agricultural export sub-sector should be consolidated.

As the export crops sector becomes completely liberalized, and the constraints of the international market are removed, prices are expected to play a more important role. Regarding the banana market, Cameroon is at moment already producing more than her quota allotted in the protected EU market. If the 'banana war' were to lead to a loss of the privileges enjoyed by ACP countries on the EU market, then given the present situation, Cameroonian bananas will not be able to compete with those from Latin America produced at a much lower cost (\$US 245 per tonne as against \$US 354 per tonne for Cameroonian bananas). The priority now seems to be looking at ways to reduce the cost of banana production so as to be competitive. This should permit Cameroon to conquer new markets or be able to compete in her traditional market in case the banana war opens up this market for Latin American bananas.

This implies that, despite the fact that prospects in terms of prices are better for bananas than for cocoa and coffee, the market prospects for bananas are quite limited. Cameroon is already producing more than her quota to the EU, and her high cost of production does not facilitate access into new markets. Cameroon therefore may still have to rely on cocoa and coffee in the short and medium term for the bulk of her agricultural export revenue.

Notes

1. Banana exporters are equally the producers, which is why there is no producer price in the banana function, as discussed above.
2. The average time lag is calculated as $(1-b)^{-1}$, where b is the elasticity of lagged export supply (Goldstein and Khan 1978:277).

References

- Adam, C.S., 1993, 'Time Series Econometrics in Africa', lecture notes for a Technical Workshop run by AERC, Nairobi.
- Adubi, A.A. and F. Okunmadewa, 1996, *Exchange Rate Risk and Nigeria's Agricultural Trade Flows: A Dynamic Analysis*, AERC Final Report, Nairobi: AERC.
- Amin, Aloysius A., 1996, *The Effects of Exchange Rate Policy on Cameroon's Agricultural Competitiveness*, AERC Research Paper No. 42, Nairobi: AERC.
- Atungire, A. and C. Tumwebaze, 1996, *Comparative Advantage and Competitiveness of Uganda's Bananas as a Non-Traditional Export Crop*, AERC Final Report, Nairobi: AERC.

- BAD/FAD, 1992, *Cameroun: Perspectives Economiques et Programmes par Pays (1993–1995)*, Département des Programmes par Pays, Région Sud.
- Baloro, G., 1998, *Analyse des Contraintes d'Offres dans la Baisse des Performances à l'Exportation du Bénin*, Document de Travail No. 19, RPI (CODESRIA), Dakar, Sénégal.
- Balassa, Bela, 1990, 'Incentive Policies and Export Performance in Sub-Saharan Africa', *World Development*, Vol. 18, No. 3, pp. 383–91.
- Bates, R., 1997, *Open Economy Politics: The Political Economy of the World Coffee Trade*, Princeton: Princeton University Press.
- BEAC (Banque des Etats de l'Afrique Centrale), *Etudes et Statistiques* (various issues).
- BEAC, 1975, *Zone Franc*, Rapport publié par le Secretariat du Comité Monétaire de la Zone Franc, Yaoundé.
- Bhagwati, J.N., 1988, 'Export-Promoting Trade Strategy: Issues and Evidence', *World Bank Observer*, Vol. 3, No. 1, pp. 27–57.
- Bond, M., 1985, 'Export Demand and Supply for a Group of Non-Oil Developing Countries', *IMF Staff Papers*, Vol. 32, No. 1.
- CCCE (Caisse Centrale de Coopération Economique), 1980, *Collecte du Cacao, Approvisionnement dans la Région du Centre Sud Camerounais*, Yaoundé.
- CFD (Caisse Française de Développement), 1995, *Cameroun: Données socio-économiques*, Yaoundé.
- Courrier*, 1994. No. 147, September–October.
- Donges, J.B. and J. Riedel, 1977, 'The Expansion of Manufactured Exports in Developing Countries: An Empirical Assessment of Supply and Demand Issues', *Weltwirtschaftliches Archiv*, Band 113, pp. 59–87.
- Elbadawi, I., 1998, 'Real Exchange Rate Policy and Non-Traditional Exports in Developing Countries', unpublished article.
- Fall, B. and B. Wade, 1996, *Politique d'Ouverture et Déterminants des Exportations au Sénégal*, Rapport Final au RPI (CODESRIA), Dakar, Sénégal.
- Fosu, Y.K., 1992, *The Real Exchange Rate and Ghana's Agricultural Exports*, AERC Research Paper No. 9, Nairobi: AERC.
- Gbetnkom, D., 1996, 'La Dynamique de l'Intégration Economique Régionale par le Marché: l'Examen du cas de l'UDEAC', Thèse de Doctorat 3^e Cycle, Yaoundé: Université de Yaoundé II.
- Gerrard, C.D., G.D. Posehn and G. Ansong, 1994, *Agricultural Pricing Policy in Eastern Africa. A Macroeconomic Simulation for Kenya, Malawi, Tanzania and Zambia*, Economic Development Institute of the World Bank, Washington, DC.
- Goldstein, M. and M.S. Khan, 1978, 'The Supply and Demand for Exports: A Simultaneous Approach', *Review of Economics and Statistics*, Vol. 60, No.2, pp. 275–86.
- International Coffee Organization, 1989, 'Exports, Quotas and Value of Exports: Coffee Years 1965/66 to 1987/88', *WP Agreement*, No. 13/88 (E), Rev. 2, July.
- Islam, N. and A. Subramanian, 1989, 'Agricultural Exports of Developing Countries: Estimates of Income and Price Elasticities of Demand and Supply' *Journal of Agricultural Economics*, Vol. 40, No. 2.
- Kwanashie, M., A.G. Garba and I. Ailima, 1997, *Policy Modelling in Agriculture: Testing the Response of Agriculture to Adjustment Policies in Nigeria*, AERC Research Paper No. 57, Nairobi: AERC.

- Lahouel, M., 1996, *Politique Commerciale Stratégique, Croissance Endogène et Commerce International*, Document Spécial No. 7, RPI (CODESRIA), Dakar, Sénégal.
- Love, J., 1982, 'The Determinants of Export Performance of Developing Countries', *Journal of Economic Studies*, Vol. 9, No. 3, pp. 55–60.
- Lukonga, I., 1994, *Nigeria's Non-Oil Exports: Determinants of Supply and Demand, 1970–1990*, IMF Working Paper 94/95, Washington, DC: IMF.
- Maddala, G.S., 1988, *Introduction to Econometrics*, New York: Macmillan.
- McMillan, Margaret, 1998, 'A Dynamic Theory of Primary Export Taxation: Evidence from Sub-Saharan Africa', Tufts University, July.
- MINEFI (various issues), *Cameroon in Figures*, Department of Statistics and National Accounts, Yaoundé.
- Njinkeu, D., 1996, 'Evaluation of Incentive Structure: A Survey and Application to Cameroon', *World Development*, Vol. 24, No. 3.
- Noumba, I., 1996, *Evolution et Déterminants des Exportations Industrielles au Cameroun*, Document du Travail No. 7, RPI, Dakar, Sénégal.
- Osuntogun, A.C., C. Edordu and B.O. Oramah, 1997, *Potentials for Diversifying Nigeria's Non-Oil Exports to Non-Traditional Markets*, AERC Research Paper No. 68, Nairobi: AERC.
- Perman, R., 1989, *Co-integration: An Introduction to the Literature*, Strathclyde Papers in Economics, 89/7.
- Ssemogerere, G.N. and L.A. Kasekende, 1994, *Constraints to the Development and Diversification of Non-Traditional Exports in Uganda*, AERC Research Paper No. 28, Nairobi: AERC.
- Svedberg, P., 1991, 'The Export Performance of Sub-Saharan Africa', *Economic Development and Cultural Change*, Vol. 50, No. 3.
- Thomas, V. and J. Nash, 1991, *Best Practices in Trade Policy Reform*, Washington, DC: World Bank.
- Trividi, P.K. and T. Akiyama, 1992, 'A Framework for Evaluating the Impact of Pricing Policies for Cocoa and Coffee in Côte d'Ivoire', *World Bank Economic Review*, Vol. 6, No. 2.
- Tshibaka, T., 1997, *Effects of Domestic Economic Policies and External Factors on Export Prices and their Implications for Output and Income in Cameroon*, AERC Final Report, Nairobi: AERC.
- United Nations, 1996, *International Trade Statistics Yearbook: Vol. II*, New York: Department for Economics and Social Information Policy Analysis.
- World Bank, 1989, *Sub-Saharan Africa: From Crisis to Sustainable Growth. A Long-Term Perspective Study*, Washington, DC: World Bank.

Analysis of Cameroon's Non-traditional Exports Market Access Potential

Lydie Tankoua Bamou and Ernest Bamou

Introduction

Following two decades of sustained growth, Cameroon entered a period of acute economic recession in 1985. *This situation is consequent, among others, to the relative lower and decreasing of the trade surplus.* From international trade theory, we can discern three ways to increase the trade balance surplus: reduce imports, increase exports and reduce imports while increasing exports. The first alternative is the main objective of the import-substitution strategy adopted by Cameroon after independence. The third can be assimilated with the country's Fifth Five-year Development Plan (1981/85) strategy, and the beginning of the economic crisis demonstrated its limits.

Pushed by the ongoing globalisation and the requirements of the structural adjustment programme (SAP) set up in 1988/89, the second alternative was adopted by the government in its export promotion strategy. This choice presupposes an increase of traditional exports and diversification towards non-traditional exports. Such diversification is all the more necessary since the country's export earnings are highly dependent on a limited number of products, and the efforts of increasing the volume of traditional exports is subject to both supply and demand constraints (Luvanga and Musonda 1993).¹ Because of the tough competition imposed by the globalization process, one can rightly pose the question of what potential was offered by Cameroon's non-traditional exports to ensure the necessary diversification of its exports. This study provides some answers to that question by identifying and classifying Cameroon's non-traditional exports according to their world market prospects (competitiveness) and their financial profitability measured by the coefficient of domestic resource cost (DRC) and the financial capital profitability ratio (FCP).

This chapter is divided into five sections. The first presents the conceptual framework; the second identifies and classifies the non-traditional exports and the third analyses the competitiveness and profitability determinants; the last section covers policy implications and concluding remarks.

Conceptual Framework

This study is closely linked to the comparative advantage thesis developed by Ricardo. It is motivated by the macroeconomic management difficulties of developing countries resulting from harmful fluctuations in their revenue owing to the international price instability of their exports, which rely on a small number of products (Collier 1996). The conceptual framework deals with the justification and the quantification of exports diversification determinants.

Justification of Exports Diversification

On the basis of two main groups of arguments, exports diversification is considered as a leading solution to the instability of export earnings of developing countries. The first and older of these two groups is based on the conclusion of MacBean et al. (1980), who show that the instability index of export earnings is higher for developing countries with a narrow export base than for developed countries with a wider base of exports. For them, commodity and geographical concentration were not the cause of export earnings instability, as was previously believed, but depended on the type of commodity. The second group is partly a rebuttal of development literature against the Ricardian static concept of comparative advantage, which when carried to its logical conclusion advocates complete specialization to maximize gains from trade. Comparative dynamic advantage is thus used to justify exports diversification for the following reasons: (i) as a reaction to autonomous factors (taste, technology, industrial capacity, producer competitiveness, etc.), the comparative advantage of a country changes with time; (ii) changes caused by the economic policy in place (e.g. tariff barriers) affect comparative advantage. These changes render dynamic comparative advantage more significant than the static one.

This means that

a nation's pattern of development is not determined once and for all, but must be recomputed as underlying conditions change or are expected to change over time. Therefore developing countries are not necessarily or always relegated by traditional trade theory to export mostly primary commodities and import mostly manufactured products (Salvatore 1990:313).

In addition to these two main groups of arguments, others taken from supply and demand approaches, on debt and industrialization and those studying the country's economic performance, environment, tariff barriers, risk aversion, etc., are well developed by Luvanga and Musando (1993), Ssemogerere and Kasekende (1994) and Atungire and Tumwebaze (1996).

Quantification of Export Diversification Determinants

Much of the debate on export diversification deals with quantitative comparative advantage models. At the level of the individual exporter, indices of competitiveness are widely discussed while at the global level economic models are developed so as to appreciate the global comparative advantage. Ssemogerere and Kasekende (1994)

classify them into supply and demand models, which use desegregated microeconomic models to identify supply or demand prospects for specific commodities for a country to diversify into, in order to increase export earnings. Unlike the demand models, there is no uniform structure for the supply models. The formulation depends on the production function from which a particular supply model is derived. Nevertheless, most supply models are concentrated on the constant elasticity of substitution production function form.

The main limitations of economic models stem from the fact that they are less explicit on the motivation of individual exporters. These exporters produce for the world market only when the realizable price in local currency covers the cost of exports and produces an adequate profit margin. The higher a product profit margin, the greater the exporter's motivation. In short, the exporter's main objective is to maximize his profits. Indices of competitiveness are thus constructed to incorporate this major preoccupation of exporters. Because of the multiple and sometimes very different meanings often given to the term competitiveness, several indicators are associated with it.

Competitiveness is generally defined at two main levels (microeconomic and macroeconomic). At the macroeconomic level, it is often defined as a country's capacity to maintain and increase the well-being of its citizens (Markusen 1992). According to Dollar and Wolff (1993), this definition imposes the concept of productivity as an approximation of competitiveness. Krugman (1994) lays stress on the dangers of macroeconomic definitions by arguing that while it is reasonable to speak of competitiveness at the firm level, its application at the national level is inappropriate.

At the microeconomic level, definitions based on efficiency (unit costs lower than those of foreign competitors) are often distinguished from those based on trade (market share). Cockburn and Siggel (1995:2) give a synthesis of these two approaches by defining competitiveness as 'the capacity of a production unit to profitably and durably win a large share of the market. ... This reflects the producer's capacity to reduce his production costs with respect to his competitors.' This definition has the advantage of incorporating both notions of profitability, which is important to private exporters, and comparative advantage, which is better appreciated at the national level by policy makers.

Identification and Classification of Cameroon's Non-Traditional Exports

In a relatively liberal economy as that of the world today, exports diversification is a search for profitability and competitiveness of a country's products. These two indicators are used to appraise the access potential of Cameroon's non-traditional exports to the world market. The non-traditional exports are then identified and the classification methodology presented.

Identification of Non-traditional Exports

Exports diversification refers to changes in the composition of exports or in the relative contribution of each product to total export earnings with a view to widen

the scope for products that have good prospects and not affected in the same manner by fluctuations of international prices. This entails changing the composition of exports with the purpose of increasing the country's foreign exchange earnings (IMF 1987). The notion of diversifying exports thus implicitly refers to traditional and non-traditional exports, and identifying such exports requires a good definition of the two notions.

Ssemogerere and Kasekende (1994) suggest that '*traditional* exports' are products that constituted the export structure of the colonial period and '*non-traditional*' are all other products, which sprang up after independence.² As thus defined, Cameroon's non-traditional exports can be identified by comparing a recent-period export structure (1996/97) with that of the colonial period (1959). Products not featuring in the 1959 period are considered non-traditional. Crude and refined oil are not included because of difficulties in obtaining required data for the calculation of their competitiveness and profitability indicators. The products were selected on the basis of the tariff position of the Central African Economic and Monetary Community (CEMAC) customs nomenclature. However, some similar products were aggregated, with fresh and dry bananas as well as plantains included as bananas, dry and green beans as beans, crude and refined sugar as sugar, and cotton cloth, spun or woven, tinted or printed as cotton cloth.

The identified non-traditional exports, listed in Table 3.1 made up a small proportion of non-oil exports in 1996/97 (only 10.6 per cent). It can be noticed that export diversification in Cameroon was more oriented towards industrial products, with twenty-four new products as against nine for the primary sector. Agro-industries have the lion share with ten new products, followed by chemical products, mining, and timber derivatives with seven, four and three new products respectively. In spite of the relatively high diversification of industrial exports, primary products still remain preponderant in the country's export earnings. Primary agricultural products, which represented 76 per cent of total export earnings in 1959 still stood at 40 per cent in 1996/97, and would almost reach 82 per cent if we add to them crude oil export earnings. This predominance of the primary sector shows that in spite of advancements in the industrial sector, industrialization after independence was geared more towards import-substitution than exportation.

Methodology

Domestic resource cost (DRC) is used as the competitiveness (the product's capacity to access the world market) indicator. The attempt is made to determine whether the country can gain by producing or importing. In other words, can local production better utilize the country's resources than the rest of the world? It furthermore compares added value generated by imported and local resources at shadow prices. The DRC can be interpreted as the ratio of the total domestic factor costs (TDFC) and the international value added rated at shadow prices (\$IVA). In other words, the DRC rates the value per produced value added unit and in shadow prices, of the resources used in production.

Table 3.1: Classification of Cameroon's 1996/97 Non-oil, Non-traditional Exports According to their Competitiveness and Financial Profitability

Nos	Products	DRC (in units)	FCP (in %)	Class ¹ (1)	Class. ² (2)
Primary products					
1	Prawns	0.73	28.29	C-P ³	C-P
2	Bark	0.64	25.36	C-P	C-P
3	Wheat	3.21	7.06	NC-NP ⁴	NC-P ⁵
4	Beans	1.19	4.06	NC-NP	NC-NP
5	Corn	2.06	23.33	NC-P	NC-P
6	Oranges	0.97	12.50	C-NP ⁶	C-P
7	Rice	4.11	4.22	NC-P	NC-P
8	Saps and vegetable extracts	1.02	21.60	NC-P	NC-P
9	Tomato	0.88	22.94	C-P	C-P
Industrial products					
10	Matches	1.07	23.41	NC-P	NC-P
11	Beer	1.91	13.71	NC-NP	NC-NP
12	Soft drinks	2.12	12.95	NC-NP	NC-P
13	Paper boxes	0.56	12.32	C-NP	C-P
14	Glass bottles	0.76	20.96	C-P	C-P
15	Chocolates	0.44	19.97	C-P	C-P
16	Hydraulic cements	1.70	14.45	NC-NP	NC-P
17	Wood sheets	0.79	19.81	C-P	C-P
18	Insecticides	1.01	13.91	NC-NP	NC-P
19	Aluminium household articles	0.42	11.63	C-NP	C-P
20	Perfumes	2.86	4.17	NC-NP	NC-NP
21	Food pastries	0.91	7.64	C-NP	C-P
22	Paints and varnishes	0.43	20.75	C-P	C-P
23	Batteries	0.82	9.10	C-NP	C-P
24	Cereal preparations	0.62	10.75	C-NP	C-P
25	Preparation for soups and pottage	1.03	14.24	NC-NP	NC-P
26	Beauty/make-up products	0.47	9.98	C-NP	C-P
27	Plastic bags	0.58	20.98	C-P	C-P
28	Soaps	0.98	20.06	C-P	C-P
29	Powder soaps	0.84	29.20	C-P	C-P
30	Bran and wheat residuals	1.67	25.21	NC-P	NC-P
31	Sugar	0.97	15.60	C-NP	C-P
32	Cotton cloth	1.53	3.94	NC-NP	NC-NP
33	Aluminium sheets	0.46	15.04	C-NP	C-P

Source: Authors' calculations.

Notes:

¹ Classification in terms of bank financing

² Classification in terms of self-financing

³ Competitive and profitable

⁴ Non-competitive and non-profitable

⁵ Non-competitive and profitable

⁶ Competitive and non-profitable.

As any domestic production can be seen either as an export or as a substitute to imported good, the DRC also rates the cost of domestic resources per foreign exchange earned or saved in the activity. In national currency units per unit of foreign currency, the DRC, in foreign currency, could therefore be rewritten thus (Siggel et al. 1993):

$$CCRI(\$) = \frac{CTRI}{VAIS} \quad (1)$$

A production activity is thus said to be profitable when the DRC index is lower than the shadow exchange rate (e^r). It is, however, practical to resort to one as the decision criterion. To this end, \$IVA is replaced by IVA/e^o and both parts of the equality of the equation are divided by e^r to obtain:

$$DRC = \frac{TDFC}{SER \cdot IVA} < 1 \quad (2)$$

where SER is the ratio between the shadow exchange rate and the official one.

The TDFC can represent the sum of labour and capital costs rates in shadow prices. As the capital cost is the sum of interest payments rated at the shadow interest rate and the capital depreciation costs rated at shadow prices, the DRC index can be written as follows if all these elements are considered:

$$DRC = \frac{w' \cdot L + (r' + d) \cdot K'}{SER \cdot IVA} \quad (3)$$

where, w' , L , r' , d and K' stand respectively for shadow salary rate, quantity of labour, shadow interest rate, capital depreciation rate and the amount of capital rates at shadow prices.

The law of comparative advantage using the DRC index can therefore be expressed as follows:

- If the DRC index is lower than 1, then less local resources are required to generate a unit of foreign currency or the value of the product at the world market prices are greater than the resource costs used in production. Therefore, as opposed to the rest of the world, the country then uses its resources more effectively and thus has a comparative advantage in the production activity.

- *If the DRC is higher than 1, more local resources are required to produce a unit of foreign currency and the country has no comparative advantage in that production activity.*

The financial capital profitability (FCP) ratio relates the financial costs of production to the value added at domestic prices for each of the firm's products:

$$FCP_i = \frac{VA_i + SB_i - (wL_i + DK_i)}{K_i} \quad (4)$$

where, VA_i , wL_i , DK_i , SB_i and K_i are respectively the value added of the production i , labour cost (salaries paid), capital depreciation cost, subvention for the production of commodity i and capital used in the production of that commodity.

According to the origin of the capital invested, FCP is often compared to two financial market interest rates (r):

- Lending interest rate, in the case of investment financing through a bank loan and
- Borrowing interest rate, in the case of self-financing investment.³

These comparisons aim to answer the following two main questions:

- Does the economic operator gain by borrowing money to invest?
- Does the economic operator gain more by investing his available money than by placing it in the financial market?

The FCP law can thus be stated: (1) If $FCP < r$, then the investment is not profitable and if $FCP > r$, then the investment is profitable.

Although the DRC generates much information, there are several practical difficulties in its application. These difficulties refer mainly to the choices of the shadow price and exchange rate, capital and its depreciation rate as well as the level of detail analysis. Referring to the Equations (3) and (4) used for the calculations, the shadow salary rate, the shadow interest rates, the stock of capital rated at domestic and shadow prices, the shadow and official exchange rates and the capital depreciation rate have to be chosen.

In order to avoid choosing the depreciation rate, we have used the amount of provision for the capital depreciation given by firms in our period of analysis (1996/97) as the amount of capital depreciation in order to meet the firms' accountancy realities. The depreciation rate is directly obtained as the ratio of this amount to the stock of the capital rates at shadow prices. However, provision for the depreciation of capital is previously treated, as proposed by Balassa, as a non-tradable input. It is divided into tradable and non-tradable capital. The amount due to tradable capital is deflated by the corresponding equipment average nominal tariff protection rate (NTP).

Several methods are proposed for the determination of the shadow exchange rate, which should reflect the scarcity of foreign exchange. However, both require considerable data on foreign trade that is not always available. An alternative is to use the purchasing power parity (PPP) index, which postulates that any change in the exchange rate is always equal to the difference between the inflation rate in the two countries so that the real value of the currency remains unchanged. This method also poses the practical problem of choosing the inflation rate. Other estimates of the shadow exchange rate are obtained from weighted average import duties and export subsidies (Squire and Van Der Tak 1975). We have used the 1997 annual average exchange rate of \$US to CFAF constructed by the national branch of the United Nations Development Program (UNDP). The results obtained are compared with those from the utilisation of the 1997 annual average exchange rate of the US\$ to CFAF in the informal financial market. The official exchange rate used is that published in IMF *Financial International Statistics* for the year 1997.

The capital stock at shadow prices is computed from the following formula:

$$K^r = \frac{c \cdot K}{1 + t_k} + (1 - c) \cdot K \quad (5)$$

where, c , K , K^r and t_k stand respectively for the proportion of tradable inputs in the capital stock value, the capital stock value at domestic prices and shadow prices and the average NTP of the tradable inputs incorporated in the capital stock.

As concerns the value of the capital stock at domestic prices, in order to obtain the capital, which has effectively contributed to the production, the net assets of the firm at the opening budgetary year (end of 1995/96) are completed by the new acquisition during the period of analysis (1996/97). As for the shadow salary rate, there is no standard one in a country. There are various types corresponding to various qualifications, periods or regions (Squire and Van Der Tak 1975). Given the fact that skilled workers are scarce in developing countries, we have considered, following Siggel et al. (1993) and Siggel (1997), that those workers be paid at the international price and the salary paid directly used as the shadow salary. This is the case for administrative, commercial, executive and foremen staff.

Because that there is always disguised unemployment of unskilled workers in developing countries, we have supposed that the salary paid to this category of workers is relatively higher than the international one and has to be adjusted. In practice, there are two methods of adjustment: (a) using the agricultural marginal labour productivity or (b) using the informal salary rate to deflate the salary paid. The first is used in this case because of the unavailability of the informal salary rate. Following Adenikinju and Chete (1996), the marginal productivity is derived from the Euler theorem.

In general, the shadow interest rate is estimated as the marginal capital productivity. Given higher capital mobility, we have considered international interest rates as an approximation. The annual average inter-banking interest rate offered in London on US\$ deposits is used because of the preponderance of European Union (EU) investments in Cameroon. The one also offered in London on the six months sterling deposits on the Paris market is utilized for the DRC sensitivity analysis. Increasing the chosen shadow interest rates by 10 and 15 per cent in order to capture the country risk of foreign investment extends this analysis. The international interest rates are found in *International Financial Statistics*.

For the sample firms, we have first listed all the main producers of each product and then completed the list with the exporting firms that deposited their Statistical and Fiscal Declaration (SFD) for the fiscal year 1996/97 (chosen as the base period of our analysis) at the Department of Statistics and National Accounting (DSNA). For each product, a questionnaire adapted from the one developed by Cockburn and Njinkeu (1993) was sent to a group of producing and exporting firms. Those who responded positively were finally selected. For the products without exporting firms or those with SFD deposited, small producers were directly interviewed. The

sample firms thus obtained comprise, for each product, either the main producer, a group of small producer firms or firms exporting more than 50 per cent of the total exports of the product at that time.

Empirical Results

The results of DRC and FCP calculations are presented in Table 3.1 above as well as the product classification in terms of investment financed respectively by bank loan and self-financing. It can be seen from that table that only ten of the thirty-three identified non-oil, non-traditional exports, of which three are primary agriculture and seven industrial, are competitive and profitable in terms of bank financing. Nine products (one agricultural and eight industrial) are competitive and non-profitable. Four other products (two primary agriculture and two industrial) are non-competitive and profitable while the last ten (three primary agriculture and seven industrial) are non-competitive and non-profitable.

In terms of self-financing, nine other competitive products (one primary agriculture and eight industrial) become profitable. This brings the number of all competitive and profitable products up to nineteen. Only two competitive products (both industrial) still non-profitable and only four (two primary agriculture and two industrial) of nineteen non-profitable products in terms of bank financing are still non-profitable in terms of self-financing.

These results, which remain relatively unchanged when shadow interest and exchange rates are varied, agree with some of Bela's (1998) conclusions, especially on the revealed competitiveness of soaps, plastic bags and paints and varnishes, and also on the non-competitiveness of hydraulic cements, matches, breweries (beer and soft drinks) and cotton cloth also highlighted by Douya (1998). However, Bela (1998) revealed the non-competitiveness of aluminium sheets and household articles. But this finding has not been confirmed by the results of our study. This contradiction can be partly explained by the choice of different shadow prices or the treatment of non-tradable inputs (these are not deflated by Bela (1998)).

The existence in our sample of a relatively higher number of non-competitive and profitable products in view of self-financing (33.3 per cent) shows that Cameroonian entrepreneurs are more interested in the profit margins they have on the local market than in the competitiveness of their production activity. This behaviour can be partly attributed to the imports-substitution policy in place before the liberalization of the economy at the end of the 1980s.

The revealed competitiveness of some agricultural products confirmed the BM (1991) study conclusions on the existence of the potential comparative advantage in the Cameroonian agricultural sector. The competitiveness of a large proportion of sample industrial products (62.5 per cent) reduces the scope of MSA (1987) and BM (1991) conclusions on the inefficient use of industrial resources in the UDEAC zone and revives discussions on the suitable level of desegregation in the competitiveness studies.

Competitiveness and Profitability Determinants of Non-Traditional Exports

Tariff and non-tariff barriers along with economic environment constitute the main groups of constraints and incentives on the competitiveness and profitability of Cameroon's non-traditional exports. This section reviews them.

Constraints

For the study period we list about eighteen taxes and duties that an exporter has to pay before selling abroad (Table 3.2).

Table 3.2 Duties and Taxes Paid on Cameroon's Exports in 1996/97

Nos	Type	Ranges
1	Fees for establishment of loading slip (Customs)	nd ¹
2	Fees for registration in the permanent survey on merchandise transactions (Customs)	nd
3	Exports duty or exit tax (Customs)	2–17% ²
4	Sanitary certificate (Ministry of Agriculture)	nd
5	Sanitary control fees (Ministry of Agriculture)	CFAF 50/tonne
6	Conditioning tax	0.5%
7	Packaging tax	5%
8	Loading tax	CFAF 247.2–588.5
9	Cameroon National Shippers Board (CNCC) tax	0.30–0.39%
10	Toll and weighting charges	nd
11	Credit distribution tax	1%
12	Turnover tax	1.5%
13	Council tax	CFAF 18/quintal
	Added for exports by air	
	ASECNA royalties	
14	Turnover tax on transport costs	CFAF 2/kg
15	Servicing tax	4.95% ³
16	Progressive tax or cash tax	10.99%
17	Uniform tax	1% ⁴
18		CFAF 1000

Notes: 1–4 as Table 3.1.

¹ Classification in terms of bank financing

² Classification in terms of self-financing

³ Competitive and profitable

⁴ Non-competitive and non-profitable

Apart from these national tariff constraints, Cameroon's exports face a good number of international tariff obstacles. According to Njinkeu (1999), in spite of the significant international tariff reduction following the implementation of the Uruguay Round (UR) agreements, some industrial countries still apply some tariff peaks of 350 per cent on some developing countries' products. The consultation group of experts of the Organisation of African Unity (OAU) on ACP–EU 1999 negotiations reported

that agricultural export products, comprising some of Cameroon's non-oil non-traditional exports (tomato, beans, oranges and maize), to the EU, Japan, USA, Canada, Brazil, China, Korea and Malaysia continued to suffer taxation rates of between 0 and 91 per cent depending on the country.

The non-tariff barriers are both national and international. At the national level, they are closely related to lengthy and costly administrative procedures, corruption, inadequate judicial, banking and financial environments and high production and transaction costs.

As concerns administrative procedures, considering that Cameroon's administration is slow and corrupted, the simple fact that one has to get visas from many administrations to comply with the regulation on exports is a source of inefficiency that greatly hampers competitiveness. In addition, there are discriminatory settlements of commercial litigation as well as judicial delays and the inadequate professionalism of exporters.

The many road-checkpoints on the main highways, poor state of road infrastructure and insufficiency of storage facilities have serious consequences on the development of exports, including delays in loading, increasing transportation costs and alteration of the quality, which often results in poor sales. Higher direct transport costs are another factor. The port of Douala, which is the main transit port in Cameroon, is the most expensive port of the West African coasts. For instance, a tonne of rice is charged CFAF 861 at Douala, compared to charges of only CFAF 666, 550, 357 and 250 in Libreville, Conakry, Dakar and Abidjan, respectively (Njinkeu and Monkam 1999).

In spite of the relatively good quality of the telecommunications network, the supply of this service, which is vital in the international trade system, remains low and its cost higher as compared to other countries. The average waiting time for a telephone line in Cameroon was 5.5 years in 1994, as against 2.5, 1.4, 1.2, 4.6 years in Côte d'Ivoire, Gabon, Senegal and in all Africa, respectively. Likewise, a one-minute call to the USA cost CFAF 2,000 against 1,545, 960 and 1,30 in Côte d'Ivoire, Senegal and in all Africa, respectively (*African Telecommunication Indicators*, 1996).

Like most developing countries, local exporters face serious problems through lack of financing. Their access to bank loans is very limited in the light of the prohibitive nature of guarantees required and the lack of specialized financial institutions (Fojana 1999).

On the international market, Njinkeu (1999) asserts that the level of non-tariff barriers applied on Cameroon's exports is the highest in SSA, both in OECD and EU countries. Among other obstacles that restricted African exports in general and Cameroonian ones in particular, we have noticed: (i) sanitary and phytosanitary measures, essentially because of a lack of information on international regulations; (ii) technical barriers relate to packaging and packing, which are increasing exportation costs; (iii) anti-dumping measures and compensatory rights, which constitute the greatest obstacles to the actual international trade regime (Stevens et al. 1998).

Incentives

Despite the higher number of obstacles faced by Cameroon's non-traditional exports, this sector benefits from national and international institutional incentives, which show an awareness of their importance in both economic growth and development of the country.

At the national level, the government as from 1989/90 adopted the SAPs, which were accompanied by a gradual elimination of quantitative restrictions and simplification of administrative procedures relating to foreign trade as well as domestic transactions. Likewise, the implementation in January 1994 of the fiscal reforms suggested to the CEMAC countries by the regional institution under support of the international financial institutions (World Bank and IMF) was accompanied by a considerable reduction of the number and scope of customs tariff instruments as well as rates (Bamou 1999). The creation of the national competitiveness committee presupposes a greater consideration of export constraint problems.

The access of Cameroon's non-traditional exports to the international market was facilitated by the government through ratification of the agreements setting up the Economic and Monetary Community for Central Africa (CEMAC) as well as those of World Trade Organisation (WTO). The creation of an inter-ministerial technical committee to follow up the WTO agreements reinforced the government's willingness to ensure market access to Cameroonian exporters. In an effort to revamp the production sector, a new investment code, attractive to foreign capital, and a new labour code, which rendered domestic salaries more flexible, were put in place from 1990.

Concerning the bank and finance sectors, though all forms of direct subventions have been suppressed, the Cameroon government is endeavouring to put in place indirect financial assistance to farmers and other operators of the non-traditional exports sector. This assistance takes the form of credit grants and provision of scientific, technical and business information relating to their activities. Finance is granted through public institutions such as Capital Investment in Community-based Micro-Agricultural Projects (FIMAC), created in 1996 to facilitate the financing of micro-agricultural projects. By 31 March 1999, the accrued amount of loans granted by this institution to farmers reached some CFAF 2 billion. Despite the smallness of the sums granted, FIMAC has the advantage of covering the entire country (Bamou et al. 2001).

Cameroon's membership of the Central African Banking Commission (COBAC in French) instituted by the Bank for Central African States (BEAC) reduces the risks of insolvency of national banks and increases their managerial capacity by reducing political pressures on their decisions. Likewise, the adoption of the new insurance code (Inter-African Conference of Insurance Market Code, CIMA) and control of the sector by a sub-regional institution (Regional Commission of Insurance Control, CRCA) are likely to revamp these important sectors for exports.

At the international level, GATT (General Agreement on Trade and Tariffs) has relatively improved market access for products from developing countries. Among

other facilities, it has introduced a reduction of an average 38% in tariffs applied to the industrial exports of developing countries. From 2005, after the enforcement of the WTO agreements, the consolidated tariff rate applicable on imports from developing countries was scheduled to be around 4.5 per cent (Njinku 1999).

With GATT, a reduction in discrimination relating to international trade has also been registered in terms of the most favoured nations (MFN) clause, which warrants that preferences obtained from bilateral negotiations must be extended to other countries. The dispensation from this rule, which benefits developing countries, is an advantage that Cameroonian non-traditional exporters can exploit within the framework of UDEAC/CEMAC as well as the information and training opportunities offered by the WTO.

Conclusion and Policy Recommendations

In supporting the Cameroon government's policy of promoting exports diversification, this chapter has attempted to provide an indication of the potential of non-traditional exports to ensure that policy by identifying and classifying the country's non-traditional exports according to their prospects of access to world markets.

From the comparison of the export structure of the period before independence and that of 1996/97, thirty-three new export products, of which close to three-quarters are industrial, are identified and can be considered as non-traditional. Calculations of their competitiveness and capital financial profitability indices show that nineteen of them (four primary agriculture and fifteen industrial) are competitive and profitable. These can thus be promoted as priorities within the exports diversification promotion framework of the government.

Analysis of the competitiveness and profitability determinants revealed that Cameroonian exports in general and non-traditional ones in particular are constrained by tariff and non-tariff barriers as well as an unfavourable national and international socio-economic environment. Nevertheless, exports performances can be improved if: (i) the number of taxes and duties and their rate levels are reduced; (ii) a unique export tax and duties window is opened; (iii) specialized production and export financial institutions are created; (iv) ongoing privatization of telecommunications and roads maintenance is accelerated; (v) the activities of the national competitiveness committee are reinforced and institutionalized as well as those of the Inter-ministerial Technical Committee for the follow-up of WTO negotiations; (vi) restructuring of the economy is carried out; and (vii) the rehabilitation of the judicial environment is reinforced.

The main limitation of the study, which cautioned against a possible misinterpretation of the conclusions, is essentially a factor of the inadequacies of the competitiveness indicator: (i) the choice of shadow prices and (ii) their static character in particular. Despite that limitation, the research has the merit of underscoring the relative competitiveness and capital profitability of some Cameroon's non-traditional exports as well as their constraints. One of the important questions in the Cameroonian non-traditional exports diversification process that the research

did not address and, which constitutes a future research area, is the identification of the potential destinations of those exports.

Notes

1. Cocoa, coffee, cotton, and timber still made up almost 85 per cent of the country's total non-oil exports earnings in 1996/97 (MINPAT/DSCN, 1998).
2. Some authors define non-traditional exports as all exports representing, individually, less than a minimum proportion of the total exports of a given period (Balassa 1990). This definition seems to be arbitrary because the choice of the base period and proportion depend on an author's interpretation and always vary from one to another.
3. Interest rates (r) in Cameroon's commercial banks during the 1996/97 period were established by the Central Bank (BEAC) as 16 and 5.5 per cent tax excluded and 19 and 4.5 per cent tax included.

References

- Adenikinju, A.F. and L.N. Chete, 1996, *Productivity, Market Structure and Trade Liberalization in Nigeria*, Final Report, Nairobi: AERC.
- Atungire, D. and C. Tumwebaze, 1996, *Comparative Advantage and Competitiveness of Uganda' Bananas as Non-traditional Export Crop*, AERC Final Report, Nairobi: AERC.
- Balassa, B., 1990, 'Incentive Policies and Export Performance in Sub-Saharan Africa', *World Development*, Vol. 8, No. 3, pp. 383–91.
- Bamou, E., 1999, *Trade Liberalisation and Economic Performance of Cameroon and Gabon*, AERC Research Paper No. 97, Nairobi: AERC.
- Bamou, E., D. Njinkeu and E. Douya, 2001, *Agriculture and the New Trade Agenda in the WTO 2000 Negotiations: Economic Analyses of Interests and Options for Cameroon*, contribution to the World Bank and AERC project: Agriculture and the New Trade Agenda in the WTO 2000 Negotiations: Economic Analyses and Policy Options for Developing Countries, Washington, DC.
- Banque Mondiale (BM), 1991, *Coopération Régionale et Ajustement Structurel: Programme de Réforme de la Politique Fiscale-douanière pour les Etats Membres de l'UDEAC*, Policy Research Department, Washington, DC: World Bank.
- Bela, L., 1998, *Compétitivité Industrielle dans l'Union Douanière et Economique de l'Afrique centrale (UDEAC)*, Rapport Final, RPE, Dakar, Sénégal
- Cockburn, J. et D. Njinkeu, 1993, *Calcul et Interprétation des Indicateurs d'Incitation Economique et d'Avantage Comparatif: Volume II, JAVINAC® - Manuel d'Utilisation*, CREPE, Université Laval, Canada.
- Cockburn, J. et E. Siggel, 1995, *Une Méthodologie d'Analyse de la Compétitivité*, Fiche Technique No. 6, RPI, Dakar, Sénégal.
- Collier, P., 1996, 'Commodity Trade Shocks in Sub-Saharan Africa', paper presented at IMF conference.
- Dollar, D. and E.N. Wolff, 1993, *Competitiveness, Convergence and International Specialization*, Cambridge, MA: MIT Press.

- Douya, E., 1998, 'Mondialisation et Compétitivité de la Filière Coton du Cameroun', papier présenté au Symposium International 98 sur Les Filières Agricoles de l'Afrique Sub-saharienne face à la Mondialisation: Enjeux et Perspectives pour le Développement Economique, Dschang (Cameroun), 19–21 Octobre.
- Fojana, F.O., 1999, 'Key Issues in the Current ACP–EU Negotiations', presentation at a Dissemination Workshop of the AERC Collaborative Research Project, Africa and the World Trading System, 17–18 April, Yaoundé.
- International Monetary Fund (IMF), 1987, *World Economy Outlook: Staff Studies – Exports Diversification in Developing Countries – Trends and the Impact of Policy*, SM/87/93, 23 April.
- Krugman, P.R., 1994, 'Competitiveness: A Dangerous Obsession', *Foreign Affairs*, March–April, pp. 28–44.
- Luvanga, N. and F. Musonda, 1993, 'Export Promotion Through Diversification: Prospects for Non-traditional Exports'. In M.S.D. Bagachwa and A.V.Y. Mbelle, eds, *Economic Policy Under a Multiparty System in Tanzania*, Dar es Salaam: Dar es Salaam University Press.
- MacBean, A.I., I. Alasdair and D.I. Nguyen, 1980, 'Commodity Concentration and Export Instability: A Mathematical Analysis', *Economics Journal*, Vol. 90, pp. 354–62.
- Markusen, J.R., 1992, *Productivité. Compétitivité. Performance Commerciale et Revenu Réel: Le Lien entre Quatre Concepts*, Ottawa: Conseil Economique du Canada.
- Maxwell Stamp Associates (MSA), 1987, *Assistance en vue de l'Elaboration d'un Plan Directeur d'Industrialisation au Cameroun: Etudes Techniques*, Yaoundé.
- MINEFI/DSCN, 1998, *Principaux Résultats du Commerce Extérieur*, Yaoundé.
- Njinkeu, D., 1999, 'Conditions d'Accès des produits Africains au Marché Avant et Après le Cycle de Négociations de l'Uruguay', papier présenté à la Conférence de dissémination du projet en Collaboration du CREA sur l'Afrique dans le Système du Commerce International, 17–18 Avril, Yaoundé.
- Njinkeu, D. and A. Monkam, 1999, *Africa and the World Trading System: The Case of Cameroon*, Revised Final Report, AERC Collaborative Research Project Africa and the World Trading System, Nairobi.
- Salvatore, D., 1990, *International Economics*, 3rd edn, New York: Macmillan.
- Siguel, E., 1997, 'Les Concepts indicateurs et Sources de la Compétitivité: Une Revue de la Littérature', document présenté à la 11ème Assemblée Générale du Réseau de Recherche sur les Politiques Industrielles en Afrique (RPI).
- Siguel, E., J. Cockburn et P. Dansereau, 1993, *Calcul et Interprétation des Indicateurs d'Incitation Economique et d'Avantage Comparatif. Volume I: Méthodologie*, RPI, CRDE et GREPE. Dakar (Sénégal) et Québec (Canada).
- Squire, L. et H.G. Van Der Tak, 1975, *L'Analyse Economique des Projets*, Paris: Economica.
- Ssemogerere, G.N. and L.A. Kasekende, 1994, *Constraints to the Development and Diversification of Non-traditional Exports in Uganda, 1981–90*, AERC Research Paper No. 28, Nairobi: AERC.
- Stevens, C.M., M. McQueen and J. Kennan, 1998, *After Lomé IV: A Strategy for ACP–EU Relations in the 21st Century*, Commonwealth Secretariat and Institute of Development Studies, December.

Cotton Supply Response in Cameroon

Emmanuel Douya

Introduction

After more than two decades of accelerated growth, arising from a period of global stability in terms of trade as well as the expansion of agricultural and oil exports, Cameroon has suffered an ongoing economic crisis since the second half of the 1980s (FAO 1995). Among the most cited causes of this crisis are the degradation of the terms of trade, resulting from a fall in the prices of the major export products, the overvaluation of the CFA franc against the US dollar and certain internal distortions (Blandford et al 1995, Tybout et al. 1996).

The impact of the crisis can be appreciated on both aggregate and sectoral levels. On the aggregate level, there was a decline in gross domestic product (GDP) by an average of 4 per cent per annum between 1985/86 and 1992/93, a growing deficit in the balance of payments and an increase in both internal and external debts.

On the sectoral level, the crisis appears to have spread in a different manner. Table 4A.1 (see appendix to this chapter) shows that the agricultural sector has outperformed the industrial sector. However, behind this general performance by agriculture lie great disparities among the main agricultural exports, with cocoa and coffee outputs continuously falling between 1989 and 1993 while that of cotton was increasing (see Table 4A.2).

At the level of the cotton sector, some disparities are also found. In terms of the trend of cotton production, sustained aggregate growth is only derived from the compensation between a decrease in production of some farmers and the rise by others. In fact, peasant profiles are not comparable since production is increasing for some farmers and either constant or fluctuating for others. Since the purchase price of cotton is the same for all farmers, fluctuations in production as much as differences among farmers seem to indicate that there exist factors other than price that significantly affect producer behaviour.

This chapter attempts to identify and evaluate the factors that impact on cotton production in Cameroon and differentiate producers' behaviour. A description of

producers' behaviour is made in order to identify their main characteristics, which should shed light on the relationships between cotton supply, the main producers' characteristics and some price and non-price variables. An inventory of ongoing sectoral agricultural policies is presented and suggestions are made for formulating alternative policies. The next section presents both a review of agricultural policies and the cotton sector in Cameroon. The third section is a literature review while the fourth presents the methodology. Discussion and interpretation of the empirical findings is followed by the conclusion and policy recommendations.

The Cotton Sector in the Agricultural Policies of Cameroon

From independence in 1960 up to 1999, Cameroon has experienced two main agricultural policies, namely state intervention to 1987 and liberalization thereafter. These policies are reviewed before the cotton sector is analysed in more detail.

Review of Agricultural Policies

State interventions in the agricultural sector were both indirect or direct. In terms of indirect interventions, these can be seen as the continuation of French and British colonial policies through marketing boards, which had a monopoly over the agricultural export trade. Through the National Produce Marketing Board (NPMB), this strategy allowed the government to retain a fraction of the nominal world market prices of export crops to finance public consumption and investment needs. Nevertheless, this policy was coupled with guidance of farmers by providing subsidized inputs through parastatals such as SODECOTON and SOCAPALM.

Direct intervention involved state corporations controlling activities formerly carried out by the private sector. The government sought to increase agricultural productivity through the establishment of a modern sector involving the expansion of plantation farming by organizations like CDC and CAMSUCO.

The second phase started in 1988 with adoption of the structural adjustment programme (SAP) whose main objectives were to redefine the role of government and reduce its interventions in the economy. In the agricultural sector, many functions formerly handled by corporations under state control were privatized. Even under this new policy, however, the cotton sector is still controlled by a parastatal while other crops such as coffee and cocoa have been liberalized. In fact, the introduction of an export tax in 1994 and the withdrawal of the government in fixing purchase prices to farmers are the only major changes in the cotton sector.

The Cotton Sector in Cameroon

Using figures from the FAO, Cameroon's cotton exports in 1995 made up 5 per cent of the country's total exports and 0.7 per cent of world cotton trade. In spite of these low figures, cotton is quite significant in the domestic economy. It is not only the main trading crop in its growing area but also a raw material for downstream industries. The wide range of activities linked to its cultivation can be grouped into

three homogeneous categories: cotton cultivation, cotton processing and textile production, which will now be considered in turn.

Cultivation of Cotton

The cotton-cultivating areas in Cameroon are concentrated in the North and Far North provinces. In these areas, the farming system is characterized by mixed crop cultivation and growing/breeding integration. Mixed crop cultivation entails judicious selection in the use of land while growing/breeding integration gives rise to conflicts between farmers and breeders since the extensive nature of the pastoral system encroaches on cultivable land. These conflicts can be exacerbated by dense populations, which increase pressure on land disputes. Since population density and housing are linked, high density means high demand for housing and consequently for land. As such, population density variably affects the land available for agriculture since it varies from one cultivating area to another.

On the other hand, rainfall is regular in one cultivating area and not in the other. As such, one can assume that the cultivating area differentiates farmers' behaviour. Production also depends on the ploughing system adopted, the two categories being the harnessed ploughing system (HPS) and a manual ploughing system (MPS). With labour being mainly family-based, the size of the area cultivated is related to family size. Lastly, cotton production is still handled by SODECOTON.

SODECOTON provides both information and agricultural inputs. Farmers are given guidance in using improved seed stock and phytosanitary products. On the inputs side, the policy is to provide all inputs on credit. Raymond (1998) notes that this provision of inputs at the right time and on credit is a factor that accounts for the success of cotton in the growing zone. In general, cotton is sold on the farm and SODECOTON ensures its transport to the factories.

The high level of intervention has resulted in maintenance of high production levels (Uma Lele et al. 1990, Raymond 1998). From the late 1980s, aggregate production stood at over 110,000 tonnes per annum. During the 1996/97 season, production registered a record 223,101 tonnes of cottonseed (SODECOTON 1999). On the other hand, it has been shown that this intervention also limits the competitiveness of cotton production. Since SODECOTON has exclusive relationships with farmers, they cannot benefit, for example, from Nigerian traders whose purchase price is often better (Douya 1998).

Cotton Processing

SODECOTON is in charge of all cotton processing activities. Cotton fibre and seed are initially processed by eight factories, which annual capacity is 130,000 tonnes of fibre. Data on production show that this capacity is poorly used. As regards fibre, an annual average of 15 per cent is sold to domestic industries while 85 per cent is sold abroad.

Three oil factories, with a capacity of 60,000 tonnes, triturate the seed obtained from the initial processing. These factories produce crude cotton oil as well as expellers,

which are sold to husbandry as animal feed. A proportion of crude cotton oil is used to provision soap and paint manufacturers and part is refined to produce edible cotton oil.

Textile Production

Production here refers to cloth, household linen and threads, obtained through spinning, weaving, pressing and other processes. The various activities herein can be grouped into three homogeneous categories: (i) tissue production, (ii) hosiery and (iii) dressmaking.

Tissue production involves using cotton fibre in producing cloth through spinning, weaving and tinturing. This is done by a parastatal, CICAM, which was created in 1965 with a view to reduce importation and promote use of local raw materials processed locally. Since the quality of Cameroonian cotton is found to be superior to what CICAM needs, its domestic use is less than 15 per cent per annum. However, with its two factories in Garoua and Douala, CICAM remains the largest producer in Cameroon and the Central African sub-region (Kloboukoff et al. 1995). The factory at Garoua has the monopoly of carrying out weaving and spinning for production cotton ecru and yarn. Part of this product is export-oriented while the balance goes to produce tissue cloth in Douala factory, which also had a monopoly until 1986 when an Indian firm set up in competition.

Supply Response Studies

Supply response studies owe much to Nerlove's seminal study of US farmers' supply responsiveness in 1958. His model explains farmers' reaction based on price expectations and area adjustment, and proves that US farmers are sensitive to and react positively to prices.

In the later literature on agricultural supply in developing countries (DCs), there is virtual unanimity that peasant supply is also responsive to price incentives (Bond 1983, Eriksson 1993). On the other hand, several authors have shown how non-price factors impact on agricultural supply (Chhibber 1988b, Binswanger 1989, Ogbu and Gbetibouo 1990, Opira 1997). These non-price factors include infrastructure, marketing, weather conditions and investments in research and development (R&D).

The consensus arising from this debate is that both price and non-price factors have an impact on agricultural supply. The ensuing question, concerning how much this supply is respectively due to price and to non-price factors, is resolved once and for all by another consensus. As such, the ascendancy of either a group of factors or the other is dependent on the crop or the region under investigation (Ogbu and Gbetibouo 1990).

For empirical evidence on agricultural supply response, a linear programming or econometric approach can be used. The econometric approach is the most direct method for evaluating farmer response to incentives (Chhibber 1988a). Although the reference model is still that of Nerlove, it has been greatly modified in later studies that are distinguished on the basis of the scale of the analysis or the estima-

tion approach. Studies that reveal the role of non-price factors are included in these two approaches.

The scale of analysis allows for distinguishing between microeconomic and aggregate supply studies. In the first case, analysis deals with a particular crop while in the second it studies the agricultural sector as a whole. Using an aggregate approach, Azam et al. (1990) show that shortage is a significant factor in explaining the supply of tradable crops. Using a microeconomic approach, Limbu (1997) demonstrates that there is a mixed impact of price and non-price factors in influencing cotton production changes in Tanzania. Contrary to these authors, Kagira (1996) combines the two approaches in estimating agricultural supply response in Kenya, revealing prices, government incentives and rainfall as relevant factors.

As regards the estimation method, analysis uses either indirect or direct approach in estimating elasticity. The indirect approach is linked to the principles of duality of the production theory (Lau and Yotopoulos 1971). Using this approach, Savadogo et al. (1995) have shown that in the Sahel aggregate supply reacts positively to price hikes of tradable crops and that the supply response of cash crops and aggregate supply is higher when non-price factors are relevant. The direct approach has made it possible for Kagira (1996) to establish that Kenyan aggregate supply of tradable crops reacts positively to prices, to government expenditure and to climate.

A number of supply response studies have shown keen interest in the African cotton sector. Uma Lele et al. (1990) analyse performances between Anglophone and Francophone African countries and reveal that, despite the pertinent price rates, differences do arise rather from institutional measures. This study confirms the results of Mesru/Cirad (1989), which shows that management structures, initiated since the colonial period by CFDT are the main factor for the progress in cotton production in West and Central Africa.

Bautista and Gehlhar (1994) examine the role of price incentives in the observed decline in cotton production in Egypt during the 1980s and in its apparent improvement in more recent years. It is shown that government interventions reduce price incentives in both short and long term and that sectoral price policy is more significant than macroeconomic factors in modifying cotton supply. Analyzing price effects on cotton production in Uganda, Opira (1998) shows that policy analyses on cotton production are useless if they exclude non-price factors. In evaluating the impact of government policies on the same crop in Tanzania, Dercon (1994) has shown that since producers' behaviour is not uniform, no aggregate supply response exists for cotton.

In Cameroon, there are few studies that are cotton-based although this crop is included in sectoral studies. As such, Amin (1996) evaluates the effects of exchange rate policy on agriculture and shows that this factor fluctuation reduces agricultural output. On the other hand, Ntangsi (1991) analyses the structural adjustment implications on agriculture and concludes that, in spite of many constraints linked to SAP, these effects have been largely positive. Tshibaka (1997) looks at the effects of domestic economic policies and external factors on export prices and their implica-

tions for output and income. He concludes that external factors most significantly affect growth in export products.

Uma Lele et al. (1990) have pointed out the positive effect of guidance on cotton performance. Elsewhere, Madi (1994) has assessed cotton production as an incremental function of price. Not only is this result contradictory, as portrayed by data in Table 4A.2 in the appendix, but also price is the sole explanatory variable. The analysis of Madi (1994) is then partial and the present chapter, based on the following methodology, aims at filling the gap.

Methodology

Before embarking on an econometric analysis of the cotton supply function, the potentially relevant price and non-price variables should be discussed.

Explaining Cotton Production in Cameroon

Cotton prices are likely to be important variables. This chapter assumes that an increase of production is motivated by the need to buy more consumer goods. As such, the cotton price (P_c) is deflated by the consumer price index (Askari and Cummings 1977). Since farmers do not know the cotton price at the moment of sowing, price expectations rather than actual prices are the relevant explanatory variables. The previous price is included in the model as a proxy for this expected price: $(P_c/CPI)_{t-1}$. In general, supply is an incremental function of price.

Farmers in general also grow crops other than cotton, and the relative prices of competing crops could potentially explain changes in the production of cotton. Farming systems analysis has suggested that millet is the most important competing crop: (P_m/P_c) . An increase in the ratio promotes millet production at the expense of cotton. Therefore, a negative relationship is expected.

Input prices for seed and fertilizers, commonly included in agricultural supply function, are excluded here. The reason is that seed and fertilizers are distributed on credit. Since it seems that farmers rarely pay back the loans and no data are available on the rate of reimbursement, it is appropriate to exclude them from the analysis.

On the other hand, some non-price variables seem very important in cotton production. Weather conditions constitute a crucial factor since cotton production is rainfed in Cameroon. The aridity index (w) already used by Kagira (1996) and Limbu (1997) is used as a proxy for weather conditions. Depending on rainfall and temperature, it is computed as follows:

$$W_{jt} = \frac{\text{average annual rainfall (millimetres)}}{\text{average monthly temperature (centigrades)} + 10}$$

Another assumption is that farmer is both a consumer and a producer and the production activity aims at providing income to ensure consumption expenses. In the area concerned, cotton is both the main trading crop and source of income for

farmers, and for current consumption, the available funds come from lagged cotton sales: $(Rc_{i(t-1)})$. Thus, in relation to consumption needs, this income can induce the farmer to produce more or less cotton. Consequently, either a positive or negative relationship is expected.

Studies of the cotton sector in Cameroon have shown that the density of population changes among growing areas. Since a rise in population density reduces land availability and particularly that reserved for agriculture, this variable (DP_j) can explain difference of performance among farmers as regards growing area.

Finally, it is assumed that the number of man-hour available per unit of area cultivated (MH_{it}) can differentiate performance between farmers since labour is family-based in the area. The higher the family size the more man-hours are available for agriculture. Given the law of diminishing returns, the expected sign could either be positive or negative.

The Model

On the basis of previously developed models on supply in DCs and the potentially relevant variables presented below, the cotton supply function can be expressed as follows:

$$Qc_{it} = f [(Pc/Cpi)_{t-1}, Pm_t/Pc, Pf_t/Pc, DP_{jt}, Rc_{i(t-1)}, w_{jt}, MH_{it}, U_{it}] \quad (1)$$

where:

Qc_{it} = cotton produced by farmer i in year t

Pc = purchase price of cotton

CPI = consumer price index

Pm_t = millet price in t

Pf_t = fertilizer price in t

DP_{jt} = population density in region j in t

$Rc_{i(t-1)}$ = lagged cotton income of farmer i

MH_{it} = number of man-hour per unit of area cultivated for farmer i in t

W_{jt} = weather conditions in region j in t

U_{it} = stochastic error term.

For data collection, there are four major sources used. The first is SODECOTON, which holds personalized technical information on cotton producers. This company handled about 310,000 producers of cotton in the 1998/99 season. Each year, it produces a technical information sheet for each farmer summarizing the farmer's production structure and costs. Data collected from these sheets are cotton production (Qc_{it}), area cultivated (Sc_{it}), cotton income (Rc_{it}), farming system, input prices, localization of farmers and cotton purchase prices to farmers (Pc).

The second source is the farmers themselves by direct interview in order to verify and complete the previous source. Data on the family size have been collected in this way. Data on population (DP_{jt}), weather conditions (W_{jt}) and consumer price indexes (CPI) are collected at the Department of Statistics and National Accounting. The last source is the Ministry of Agriculture for information on agricultural sectoral policies in general and the cotton sector in particular.

Empirical Estimates

A panel data approach has been chosen for empirical estimates for the following reasons. First, the availability of a large number of data points increases the degrees of freedom and reduces co-linearity among explanatory variables. Second, panel data analysis allows carrying out both cross-sectional and time-series estimates based on the same body of data. Finally, it can allow a deeper understanding of cotton producers’ behaviour through the individual and temporal dimensions of the results (Koutsoyanis 1977, Dormont 1989, Hsiao 1992, Dessus 1996). The choice of the model as well as of the estimator is Hausman’s (1978) specification tests.

Sampling Procedure

Since 1992, the number of farmers increased by an average by 6.8 per cent per annum, reaching 310 000 in 1999 (SODECOTON 1999). A selection of 200 farmers, using ploughing system and cotton-cultivating area as criteria, was made from regular producers in the period 1992 to 1998. Some 76 per cent of farmers in the sample practised HPS in 1992 and 24 per cent MPS. On the other hand, 60 per cent of farmers were localized in the North (R1) and 40 per cent in the Far North (R2). Using a simple quota choice and these percentages, the sample has been elaborated as presented in Table 4.1.

Table 4.1: Sampling Structure

	R1	R2	Share	Size
HPS	91	61	76	152
MPS	29	19	24	48
Share	60	40	1	—
Size	120	80	—	200

Source: author’s calculations.

This table shows that among the selected 200 farmers, 120 live in the North province. Within these, 91 practise HPS and 29 MPS. Among the remaining 80 farmers in the Far North province, 61 are HPS-based while 19 practise MPS. The statistical description of this sample is presented in Table 4A.4.

Results of Regressions

This section presents and discusses the findings of the empirical analysis. Before running the regressions, it was found out which variables are correlated with each other. This exercise suggested that cotton price is correlated with that of fertilizers and fertilizers with millet. To examine this problem, stepwise regressions were attempted whereby one regressor was included after the other. Results with regard to the aggregate model (Table 4.2) are discussed, followed by those from sub-samples dependent on cotton-cultivating areas and ploughing system models. Since variables in all regressions are expressed in logs, coefficients are directly interpreted as elasticities.

Table 4.2: Regression Results for the Aggregate Model
(t-statistics in parentheses)

Variables	Plain OLS		FEM		REM	
Rc_{it-1}	.686 (36.209)	.683 (36.093)	.075 (2.776)	.075 (2.791)	.355 (16.334)	.350 (16.230)
DP_t	-.444 (-.904)	-.379 (-.773)	-.029 (-3.001)	-.029 (-3.018)	-.471 (-.597)	-.435 (-.550)
W_t	-.013 (-1.327)	-.986 (-1.051)	-.025 (-2.964)	-.025 (-3.011)	-.010 (-1.579)	-.959 (-1.400)
MH_{it}	-.476 (-16.815)	-.476 (-16.779)	-.792 (-24.481)	-.792 (-24.508)	-.715 (-25.039)	-.715 (-25.038)
Pc_{t-1}	-.732 (-2.083)	-	-.029 (-.114)	-	-.311 (-1.205)	-
$(Pf/Pc)_t$	-.506 (-2.437)	-.889 (-9.267)	.305 (1.871)	.289 (3.270)	-.136 (-.897)	-.293 (-3.880)
$(Pm/Pc)_t$	.215 (2.098)	.312 (3.420)	.358 (4.376)	.361 (4.729)	.238 (3.182)	.279 (4.191)
C_{it}	6.841 (6.406)	4.805 (11.138)	-	-	4.918 (6.242)	4.046 (12.747)
A. R^2	.68	.68	.83	.83	.74	.74

Source: author's calculations.

As can be seen in the table, there is no significant difference between results generated by plain OLS model and those by REM. But since the Hausman test rejects the null hypothesis, the FEM is favoured. This preferred FEM suggest that a specific fixed effect differentiates farmers' behaviour. These effects are presented in Table 4A.5.

As regards results, all variables significantly affect cotton supply except cotton price. Millet price has an unexpected result since cotton production increases when this variable goes up. The explanation could be that farmers consider millet not only as a food crop but also as cash crop in diversifying their income sources. This result, also found in Tanzania (Limbu 1997), is strengthened by the income elasticity sign. In fact, it was assumed that income positively affects cotton supply only if its level does not ensure current consumption expenses. Since this sign was positive, one can suggest that farmers need diversifying income sources, and millet is prospective in this regard.

The elasticity sign of fertilizer price was also unexpected. The twin explanation could be that since fertilizers are crucial in cotton-cultivating, farmers use them whatever their price (Madi 1994); and secondly, since these fertilizers are sold on credit, farmers have to produce more cotton in an attempt to return the increasing loan as the fertilizer price increases. As such, cotton production increases as fertilizer price goes up.

Finally, regression results have shown that production reduction is largely caused by an increase in the number of man-hours, and not, for example, by a decreased cotton price. Indeed, cotton supply significantly decreased as the number of man-hours went up. This result seems to outline that an unoccupied labour force exists in

cotton-growing areas. As such, the cost of man-hours is higher than its contribution to cotton production.

In an attempt to confirm assumptions according to which cotton-cultivating areas and ploughing systems differentiate farmers' behaviour, comparative analysis of aggregate and sub-sample models is now in order. The first general finding is that contrary to the aggregate model, the REM has been found favourably better for all sub-sample models. Regression results are therefore presented, in Table 4.3, for these preferred models only. The comparative effects of aggregate and growing-area models are discussed, followed by that of the same aggregate model relative to the ploughing systems used.

Table 4.3 Regression Results for the Sub-sample Models
(T-statistics in parenthesis)

Variables	Zonal Models		Ploughing System Models	
	North	Far North	HPS	MPS
Rc_{it-1}	.400 (14.426)	.285 (8.093)	.354 (14.893)	.196 (3.530)
DP_t	.646 (.222)	.097 (.473)	.017 (.531)	-.123 (-2.093)
W_t	-1.602 (-1.931)	-.329 (-1.891)	.062 (.406)	-.976 (-3.226)
MH_{it}	-.730 (-19.721)	-.698 (-15.480)	-.721 (-22.066)	-.645 (-11.112)
$(Pf/Pc)_t$	-.605 (-1.345)	-.352 (-2.892)	-.280 (-3.350)	-.080 (-.469)
$(Pm/Pc)_t$	.471 (1.654)	.261 (2.316)	.306 (4.128)	.148 (1.016)
C_{it}	7.272 (1.336)	5.099 (4.532)	3.445 (5.445)	7.295 (5.937)
A. R^2	.77	.69	.76	.52

Source: author's calculation.

It has been shown for the aggregate model that all variables, except cotton price, affected cotton supply. This is not the case as regards regression results from cotton-cultivating areas. Contrary to the North province, where no prices were found relevant, that of fertilizers and millet significantly impacted on cotton supply in the Far North province. As can be seen in Table 4.3, farmers significantly react to more variables in the Far North province than in the North province. As such, significant explanatory variables change from one growing area to another as well as from zonal models to the aggregate one. Therefore, farmers' behaviour is not uniform and no aggregate supply response exists for cotton in Cameroon. Dercon (1994) found similar results in evaluating the impact of government policies on cotton production in Tanzania.

In comparing regression results between the aggregate and the ploughing system models, it has once more been shown that no aggregate supply response exists for cotton in Cameroon. As portrayed by the data in Table 4.3, millet and fertilizer prices that were relevant for the aggregate model are still relevant, but now for the HPS model only. On the other hand, and unlike the HPS model, weather conditions and population density affected cotton supply in both aggregate and MPS models. As such, the ploughing system is an indisputable criterion in defining differentiated policy incentives towards cotton production in Cameroon.

Another finding of the study is that cotton supply increases as income goes up but decreases as the number of man-hours per unit of area cultivated increases. Since this result is pertinent in both aggregate and sub-sample models, as can be seen from Table 4.3, the income and the number of man-hours constitute the plinth variables of related government policy towards cotton production in general.

Conclusion

In an attempt to support government policy towards cotton production in Cameroon, this chapter has provided empirical evidence showing how both price and non-price variables not only affected cotton supply but also differentiated farmers' behaviour.

Using a panel data approach, the study has mainly demonstrated that no aggregate supply response exists for cotton since farmers' behaviour is not uniform. In fact, a striking difference has been noted between the aggregate and the various sub-sample models towards variables that significantly impacted on cotton supply. While all variables, except cotton price, were found relevant for the aggregate model, some of these were insignificant either in one growing area and not in another or in one ploughing system and not in another.

The main policy implication of such a result is that, since no aggregate supply response exists for cotton, government policy towards cotton production might be differentiated dependent of target. Therefore, it has been demonstrated that growing areas and ploughing systems constituted pertinent criteria in defining these differentiated and supporting policies towards cotton production in Cameroon. As regards growing areas, for example, in addition to income and number of man-hours, government policy has to pay attention to input and alternative crop prices in improving cotton production in the Far North province.

Econometric analysis has also shown that the income and number of man-hours available per unit of area cultivated significantly impacted on cotton production in all areas. Linking the negative sign of elasticity of the number of man-hours to the law of diminishing returns, it has been assumed that unoccupied labour exists in cotton-growing areas. To resolve such a problem, ways should be sought to ensure that farmers increase the area under cotton cultivation in an attempt to exploit efficiently the available labour force. This solution is feasible since cotton production is not constrained by available land as portrayed by the insignificance of population density in the sub-sample models.

References

- Amin, A.A., 1996, *The Effects of Exchange Rate Policy on Cameroon's Agricultural Competitiveness*, AERC Research Paper No. 42, Nairobi.
- Askari, H. and J.T. Cummings, 1977, 'Estimating Agricultural Supply Response with the Nerlove Model: A Survey', *International Economic Review*, Vol. 18, No. 2, pp. 257–92.
- Azam, J.P. et J.C. Barthelemy et Morisson, 1991, 'L'Offre de Cultures Commerciales en Economie de Pénurie', *Revue d'Economie Politique*, Vol. 42, No. 3, pp. 553–73.
- Bautista, R.M. and C.G. Gehlhar, 1994, 'Price Competitiveness and Variability in Egyptian Cotton: Effects of Sectorial and Economy-wide Policies', *Journal of African Economies*, Vol. 5, No.1, pp. 21–51.
- Binswanger, H., 1989, 'The Policy Response of Agriculture'. Proceedings of *the World Bank Annual Conference on Development Economics*.
- Blandford, S., D. Friedman, S. Lynch, N. Mukherjee, and D.E. Sahn, 1995, 'Oil Boom and Bust: The Harsh Realities of Adjustment in Cameroon'. In: D.E. Sahn, ed., *Adjusting to Policy Failure in African Economies*, Cornell: Cornell University Press.
- Bond, M.E., 1983, 'Agricultural Responses to Prices in Sub-Saharan African Countries', *IMF Staff Papers*, Vol. 30, No 4.
- Chhibber, A., 1988a, 'Croissance de la Production Agricole: Incidence des Prix et des autres Facteurs', *Finances et développement*, Juin, pp. 44–7.
- Chhibber, A., 1988b, 'The Aggregate Supply Response: A Survey'. In: S. Commander, ed., *Structural Adjustment and Agriculture: Theory and Practice in Africa and Latin America*, Oxford: James Currey Publishers, pp. 55–68.
- CIRAD (1994), 'Modéliser les Comportements des Ménages Agricoles dans le Cadre de Politiques de Réforme Economique', Paris: CIRAD /URPA.
- Colman, D., 1983, 'A Review of the Arts of Supply Response Analysis', *Review of Marketing and Agricultural Economics*, Vol. 51, No. 3.
- Dercon, S., 1994, 'Peasant Supply Response and Macroeconomics Policies: Cotton in Tanzania', *Journal of African Economies*, Vol. 2, No. 2, pp. 157–94.
- Dessus, S., 1996, *Introduction à l'Econometrie des Données de Panel*, Document Spécial No. 5, RPI, Dakar, Sénégal.
- Dormont, B., 1989, *Introduction à l'Econometrie de Panel: Théorie et Application à des Echantillons d'Entreprises*, Paris: Edition du CNRS.
- Douya, E., 1998, *Analyse de la compétitivité de la filière coton au Cameroun*, Rapport définitif présenté au RPE, Dakar, Sénégal.
- Eriksson, G., 1993, *Peasants' Response to Price Incentives in Tanzania: A Theoretical and Empirical Investigation*, Scandinavian Institute of African Studies, Uppsala, Research Report No. 91.
- FAO, 1995, *Analyse de l'Impact de la Dévaluation du FCEA sur la Production Agricole et la Sécurité Alimentaire et Proposition d'Action*, Rapport Technique, TCP/CMR/3452, Rome: FAO.
- Gbetnkom, D. and A.S. Khan, 1999, *Determinants of Traditional and Non-traditional Agricultural Exports: The Case of Cameroon*, Interim Report, Nairobi: AERC.
- Hausman, J.A., 1978, 'Specification Tests in Econometrics', *Econometrica*, Vol. 46, pp. 1251–71.
- Hsiao, C., 1992, *Analysis of Panel Data*, Econometric Society Monographs, Cambridge: Cambridge University Press.
- Junankar, P.N., 1989, 'The Response of Peasant Farmers to Price Incentives: The Use and Misuse of Profit Functions', *Journal of Development Studies*, Vol. 25, No. 2, pp. 169–82.

- Kagira, B.M., *Agricultural Output Response to Output and Input Process: The Case of Kenya*, AERC Final Report, Nairobi.
- Kloboukoff, P., B. Lesluyes et J.C. Le Goff, 1995, *La Compétitivité de la Filière Textile en Afrique Subsaharienne*, Paris: Ministère de la Coopération.
- Koutsoyanis, A., 1977, *Theory of Econometrics*, 2nd edn, Hong Kong: Macmillan.
- Lau, L.J. and P. Yotopoulos, 1971, 'A Test of Relative Efficiency and Application of Indian Agriculture', *American Economic Review*, Vol. 61, No. 1, pp. 94–109.
- Limbu, F., 1997, *Response of Cotton Supply to Price and Non-Price Incentives in Tanzania*, AERC Final Report, Nairobi.
- Madi, A., 1994, 'La Politique des Prix et la Dynamique du Système Productif dans la Zone cotonnière au Cameroun' Thèse, Montpellier (France).
- MESRU/CIRAD, 1989, *Le Coton en Afrique de l'Ouest et du Centre: Situation et Perspectives*, Paris, Ministère de la Coopération.
- MINEFI/DSCN, 1996, *Le Cameroun en Chiffres 1994*, Yaoundé.
- MINEFI/DSCN, 1998, *Le Cameroun en Chiffres 1997*, Yaoundé.
- Nerlove, M., 1958, *The Dynamics of Supply: Estimation of Farmers Response to Price*, Baltimore: Johns Hopkins University Press.
- Nerlove, M., 1979, 'The Dynamics of Supply: Retrospect and Prospect', *American Journal of Agricultural Economics*, pp. 874–88.
- Ntangsi, J., 1991, 'Structural Adjustment in Cameroon and Implications for Agriculture'. In: M.R. Langham and F. Kamajou, eds, *Agricultural Policy Analysis in Sub-Saharan Africa* Proceedings of an International Symposium, University Centre of Dschang-Dschang, Cameroon, 4–6 November.
- Obu, O.M. and M. Gbetibouo, 1990, 'Agricultural Supply Response in Sub-Saharan Africa: A Critical Review of Literature', *African Development Review*, Vol. 2, No. 2, pp. 83–99.
- Opira, O., 1997, *Farmers' Behaviour to Changes in Producer Prices*, Sveridges Lantbruks Universitet.
- Oyejide, A.T., 1990, *Supply Response in the Context of Structural Adjustment in Sub-Saharan Africa*, AERC Special Paper No. 1, Nairobi.
- Raymond, G., 1998, 'Les Intrants Agricoles en Afrique Zone Franc: Le Cas du Cameroun', Symposium, 21–25 September, Bamako, Mali.
- Savadogo, K., T. Reardon et K. Pietola, 1995, 'Mécanisation et Offre Agricole dans le Sahel: Une Analyse de la Fonction de Profit des Exploitations Agricoles', *Revue d'économie politique*, No. 2, pp. 57–90.
- Sevillo-Siero, C.A., 1991, 'On the Use and Misuse of Profit Functions for Measuring the Price Responsiveness of Peasant Farmers: A Comment', *Journal of Development Studies*, Vol. 27, No. 4, pp. 123–36.
- SODECOTON, 1999, *Rapport d'activités 1998/99*. Garoua, Cameroun.
- Tshibaka, T.B., 1997, *Effects of Domestic Economic Policies and External Factors on Export Process and their Implications for Output and Income in Cameroon*, AERC final report, Nairobi.
- Tybout, J., B. Gauthier, G.B. Navaretti and J.de Melo, 1997, 'Firm-Level Responses of the CFA Devaluation in Cameroon', *Journal of African Economies*, Vol. 6, No. 1, pp. 3–34.
- Uma, L., N. Van De Walle and M. Gbetibouo, 1990, *Cotton in Africa: An Analysis of Differences in Performance*, Media Discussion Paper No. 7, Washington, DC: World Bank.

Appendix

**Table 4A.1: Change in GDP by Activity Groups in Cameroon
(billions of CFA francs)**

	1989/90	1990/91	1991/92	1992/93	1993/94
Primary	804.5	810.3	858.7	860.6	1,031.5
Secondary	945.7	909.1	741.1	719.7	757.4
Tertiary	1,117.1	1,181.5	1,158.3	1,148.8	1,299.8
Total	2,927.3	2,900.9	2,758.1	2,728.5	3,088.7
Variation (%)	ND	-0.9	-5.0	-1.1	13.2

Source: MINEFI/DSCN 1996.

**Table 4A.2: Change in Main Export Crops (thousands of tonnes) and
Their Prices (CFA francs/kg)**

	1989/90	1990/91	1991/92	1992/93	1993/94
Arabica coffee	11,3 (483)	13.1 (250)	12.8 (238)	10.6 (200)	9.9 (196)
Robusta coffee	81,9 (463)	80.5 (175)	78.0 (148)	77.5 (141)	75,0 (134)
Cocoa	120.0 (443)	99.0 (250)	95.0 (210)	89.0 (182)	85.0 (179)
Cotton	103.9 (142)	113.2 (95)	114.4 (90)	125.7 (86)	126.5 (80)

Note: prices in parenthesis.

Sources: FAO 1995, MINEFI/DSCN 1996, Tshibaka 1997.

Table 4A.3: Correlation Matrix of Estimated Coefficients

	Rc_{it-1}	Dp_{it}	W_{it}	ASc_{it}	$(Pc/Cpi)_{t-1}$	$(Pf/Pc)_t$	$(Pm/Pc)_t$	C
Rc_{it-1}	1							
Dp_{it}	0,009	1						
W_{it}	-0,005	0,365	1					
MH_{it}	0,201	-0,001	-0,012	1				
$(Pc/Cpi)_{t-1}$	-0,038	0,062	0,175	0,015	1			
$(Pf/Pc)_t$	-0,078	-0,017	-0,019	-0,049	-0,899	1		
$(Pm/Pc)_t$	-0,007	-0,010	0,004	0,009	0,551	-0,751	1	
C	0,052	-0,311	-0,754	-0,070	-0,740	0,544	-0,400	1

Source: author's calculations.

Table 4A.4: Statistical Description of Variables

Variables	Mean	Standard Deviation	Minimum	Maximum
Qc_{it}	222.732	174.948	12.000	1300
Rc_{it}	300.590	259.512	20.892	1793
DP_{jt}	38.148	26.696	15.500	75
W_{jt}	20.492	1.519	17.500	23.700
MH_{it}	1.908	.921	.350	9.600
$(Pc/CPI)_t$	101.772	9.963	84.400	113.865
$(Pf/Pc)_t$	118.853	23.302	85.870	143.102
$(Pm/Pc)_t$	80.458	16.259	66.053	108.757

Source: author's calculations.

Table 4A.5: Specific Effects for the Aggregate Model

No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
1	3.684	26	2.925	51	2.896	76	3.104	101	4.095	126	4.472	151	5.144	176	2.861
2	2.928	27	3.872	52	2.922	77	2.822	102	4.266	127	4.787	152	5.576	177	4.268
3	3.553	28	3.891	53	2.999	78	3.682	103	4.598	128	5.167	153	5.170	178	3.483
4	2.936	29	4.362	54	3.882	79	4.075	104	5.177	129	5.032	154	5.047	179	2.947
5	3.176	30	3.658	55	3.326	80	2.847	105	4.923	130	5.104	155	5.035	180	3.179
6	3.257	31	3.564	56	3.319	81	3.597	106	4.754	131	4.780	156	5.270	181	3.010
7	2.993	32	3.023	57	3.375	82	3.071	107	5.876	132	5.033	157	5.329	182	2.983
8	2.949	33	3.356	58	2.841	83	3.219	108	5.246	133	5.400	158	4.512	183	3.209
9	3.837	34	3.274	59	3.097	84	3.093	109	4.318	134	5.163	159	4.466	184	4.150
10	3.620	35	3.610	60	2.740	85	3.656	110	5.467	135	4.734	160	4.603	185	2.492
11	2.228	36	3.602	61	2.854	86	2.935	111	4.961	136	4.769	161	4.892	186	2.658
12	2.368	37	2.897	62	1.480	87	3.015	112	4.668	137	3.967	162	5.690	187	2.862
13	2.849	38	2.760	63	4.117	88	3.015	113	4.799	138	5.171	163	4.336	188	3.066
14	3.283	39	2.789	64	4.074	89	3.560	114	4.975	139	5.636	164	5.042	189	2.929
15	3.670	40	2.849	65	4.169	90	3.947	115	4.762	140	5.125	165	4.827	190	2.730
16	3.350	41	2.861	66	3.478	91	5.353	116	3.700	141	4.771	166	4.362	191	3.407
17	3.263	42	3.227	67	3.689	92	4.848	117	4.466	142	6.213	167	4.571	192	2.326
18	4.314	43	3.390	68	3.415	93	4.028	118	4.664	143	4.820	168	4.064	193	2.847
19	3.349	44	2.558	69	3.066	94	4.531	119	4.511	144	4.993	169	3.936	194	3.100
20	3.064	45	2.052	70	3.145	95	4.921	120	4.399	145	4.396	170	4.549	195	3.607
21	3.420	46	2.388	71	3.441	96	5.635	121	4.791	146	4.679	171	2.756	196	3.613
22	3.372	47	2.655	72	3.879	97	4.581	122	4.577	147	4.397	172	2.869	197	3.628
23	2.972	48	2.864	73	3.228	98	4.785	123	3.866	148	4.465	173	4.164	198	3.609
24	3.961	49	3.161	74	3.367	99	4.562	124	5.366	149	4.948	174	3.515	199	3.526
25	2.904	50	2.697	75	3.055	100	4.543	125	4.728	150	4.688	175	3.532	200	4.229

Source: author's calculations.

Cameroon's Economy and Reforms

Aloysius Ajab Amin

Economic Policy

Cameroon's economic policy changes have usually been made in order to increase the output of goods and services, with the ultimate aim of improving societal welfare. Conceptually, economic policy may define the extent to which the public (government) policy creates a good environment to enable socio-economic growth for all sectors of the population. This includes a continuous reduction of poverty, which would lead to long-run poverty eradication and the improvement in general welfare. We can divide economic policy into two main interrelated components: public sector management policies and macroeconomic policies.

Macroeconomic policies include fiscal and monetary policies, trade and exchange rate policies. Under public sector management policies, the government creates and provides incentives, which enable both households and businesses to accumulate resources for production and consumption. The government supports efficient and effective institutions and services, which promote private initiative and facilitate the smooth functioning of society and economy, including the rule of law, social services, infrastructure and communications. Such policies should provide and ensure the participation of all members of society and social services that reach all groups in society. What makes a good policy is controversial or debatable, especially as development policy is an ongoing process. Through experience, some knowledge has been established about growth-enhancing policies, such as the proper functioning of the financial markets and foreign exchange, foreign trade and openness, proper delivery of social services and effective rule of law. This means the government plays an important role even in a market economy.

During the 1970s and 1980s Cameroon had very good revenue sources (Table 5.1) and opportunities for carrying out worthwhile investment expenditure on public goods and services as well as expenditure on those components that generate huge positive externalities and create cohesive effects in such sectors as education, health and infrastructure.

**Table 5.1: Public Expenditure and Revenue
as a Percentage of GDP (1979/80–1998/99)**

Year	Revenue % GDP	Exp. % GDP
1979/80	18.4	18.2
1980/81	18.2	18.2
1981/82	19.0	19.0
1982/83	19.0	18.9
1983/84	20.4	20.3
1984/85	19.6	19.3
1985/86	21.3	21.2
1986/87	21.3	21.6
1987/88	16.3	17.3
1988/89	14.8	15.7
1989/90	14.8	14.7
1990/91	15.2	15.1
1991/92	17.6	18.0
1992/93	14.3	14.7
1993/94	11.3	12.4
1994/95	13.0	13.0
1995/96	14.5	14.5
1996/97	18.2	17.2
1997/98	19.4	18.8
1998/99	17.7	17.5
1999/00	16.6	15.3
2000/01	18.8	17.0

Source: National Assembly, Yaoundé, 1982–2000.

With the right national will, political will and national interest, a solid foundation would have been laid down for sustainable development to avoid the resulting lapses and failures of the late 1980s and thereafter. The record shows that the resources were not properly maximized. The government did not utilize the windfall, particularly of oil revenue and commodity revenue to properly develop the economy, notably building and strengthening the right skills and competencies in the social sectors; and connecting all the regions of country through an intensive infrastructure network. The different policies adopted so far have not been based on a solid foundation for sustainable development that is broad-based for the improvement of people's welfare.

This chapter brings out these issues, in particular, showing the relationship between reforms and growth. It demonstrates the policy failures and highlights how the reforms could have been better designed for sustainable development. Cameroon is endowed with huge resources and great potentials needing proper exploitation, rational utilization and efficient exploitation of the resources by effective management.

At independence in the 1960s, a protection and import substitution policy regime was enforced in Cameroon. Quantitative and qualitative trade barriers were put in place including quota restrictions on certain imports. Local industries were given

subsidies and subventions. Prices, to some extent, were controlled. The goal of these policies was to develop an industrial sector. Unfortunately, the industrialization drive was carried out mainly to satisfy domestic demand and lacked the international competitive pressures to create efficiency and build a good industrial base. Trade policy also included export taxes, which were an important revenue source for the state. Yet these taxes restricted increased production and transformation of primary products, especially when there is much evidence to show greater supply price response. The 1970s witnessed the extensive expansion of the public sector, yet in agriculture the support was not given the emphasis needed.

Since the 1970s, economic reforms in many African countries including Cameroon have been introduced only following economic crisis. In many cases, the complexity of the reforms has confused the outcome of the reform process, sometimes generating negative effects. In the late 1980s, economic crisis led to the stabilization and structural adjustment programmes (SAPs), which generated a gamut of policy regimes aimed at economic liberalization, state disengagement from production activities, national and regional fiscal reforms under the Central Africa Custom Union (UDEAC) and later the Central Africa Economic and Monetary Community (CEMAC). The SAP continued in the 1990s, and later the issue of governance was brought into the policy agenda. Today the focus is on poverty, with poverty-reduction strategies and governance, now at the centre of the development process. The poverty level had significantly increased from 46 per cent in 1984 to 51 per cent in 1996, but decreased to 41 per cent in 2001 (Amin and Dubois 2000; Fambon et al. 2002).

Cameroon's Socio-Economic Plans

In the early phase of Cameroon's independence, the government put into place instruments for nation-building and promoting economic development. A series of five-year economic and social development plans was initiated starting in 1961. The main objective of the first five-year plan (1961–66) was to integrate the country politically and economically and to improve the standard of living of the population. This was mainly to be achieved by doubling the per capita income from CFAF 21,500 in 1961 to CFAF 43,000 in 1980. Poverty per se was never mentioned at this period. The objective was rather improvement of the welfare of the people. But which group of people? This was not quite clear.

The establishment of the Federal State (East and West Cameroon) in 1961 greatly increased the economic, demographic and political importance of the country. Development policies of the federated states were integrated in the second development plan (1966–71) with the plan further focusing on again doubling the per capita income by 1980 and reducing socio-economic inequalities between the regions of the country. This, however, was hardly achieved. Regional inequalities were not addressed, instead the basis of inequalities was established with some sectors and regions more favoured than others. The third plan stressed increased production and productivity of all sectors of the economy with significant investment expenditures directed towards the private sector. In the third plan (1971–76), 63 per cent of total

investment was allocated directly to productive projects, compared with 46 per cent in the second plan. But the private sector did not develop as was hoped, with no solid base for its development. Rather, these plans presented a list of items to be done, which were never fully completed. While the second plan had relied mainly on external resources, the third plan relied essentially on national resources.

Table 5.2: Public Service Employment

Year	Number of Civil Servants	
1984	130,300	
1985	161,619	
1986	176,400	
1987	145,639	
1988	136,939	
1989	143,312	
1990	154,956	
1991	143,337	
1992	136,882	
1993	126,878	
1994	125,065	
1995	124,305	
1996	135,903	(163,277)
1997	132,855	(160,297)
1998	130,822	(161,851)
1999	119,275	(161,608)
2000	161,755	
2001	165,918	

Source: *Cameroon in Figures*, 2002.

The fourth development plan (1976–81) coincided with the oil boom. By 1985 the share of oil in Cameroon's GDP had increased to 18 per cent and now made up 45 per cent of government revenue and 35 per cent of exports. This was also the period when there were increases in world commodity prices. The fourth plan stressed large public projects and import substitution industry, which later became highly inefficient, and production was mainly for domestic consumption. Furthermore, the salaries of civil servants were increased regularly. The main public salary scales had been established in 1970. Between 1975 and 1982 there were yearly salary increases, and the sharp increases in the public sector employment (Table 5.2) resulted in a large public budget. Between 1970 and 1984 many public enterprises were created, such that by 1985 the state enterprises in receipt of public subsidies employed over 100,000 people. This signalled the beginning of massive public sector expansion, without proper rationalization of skills and competencies. Within this same period much road and rail infrastructure development was carried out. Before 1985, there was considerable emphasis on public investment and less labour-intensive activities. This windfall could have built a sound economic base through deliberate investment

policy, yet little effort was put in developing the rural sector in all its dimensions or into building a comprehensive communications and infrastructure network.

At independence the population was 5.5 million, and the government felt more people were needed for the country to attain its full economic potential. Accordingly pro-birth policies were implemented, such as family allowances provided for each additional child, and contraceptives were virtually banned by a 1969 law (No. 29169). By the early 1980s, however, rapid population growth had become a cause for concern, and by 1986 the government decided that population growth must be kept in balance with national resources. It began by establishing a population planning unit to examine the demographic concerns in development planning.

Oil revenue allowed a rapid expansion of investment and growth of the non-oil sector. For the first time in the series of five-year plans, the fifth plan (1981–86) took into consideration the ‘oil boom and constraints on investment absorptive capacity’. Yet more allocation went to administrative equipment and ministerial buildings and little to the agricultural sector. Through the fourth and fifth plans, the public sector grew rapidly and took a significant share of the national budget.

Between 1960 and 1985, the state had intervened extensively in the economy. Prices of goods and services (including agricultural commodities) were regulated; public industries and agricultural inputs (for example, fertilizers) were subsidized, coupled with the creation of many public enterprises, instead of building up the private sector or a policy of supporting both public and private. Industries operated under heavy protection. The public service was greatly expanded. The public sector still remains the largest employer and the largest sector in the economy, particularly in terms of expenditure in GDP and employment. Between 1985 and 1987 the real exchange rate of the franc appreciated sharply, while the US dollar depreciated by 40 per cent against the CFA franc; over the same period the terms of trade deteriorated by 47 per cent (World Bank 1995; Amin 1996) as oil output started to fall. This exposed the institutional and structural weaknesses of the economy, showing how growth before then was not built on a solid and sound macroeconomic foundation: it was growth without appropriate transformation and structural change in the economy.

The sixth plan (1986–91) marked a turning point as the economy collapsed and with the SAP at the heart of policy the plan was virtually abandoned. But following from previous policies, the economic crisis could have been foreseen and the right actions taken. This was not done. The government started internal adjustment, including measures in the areas of public finances, price policy and institutions, by launching an austerity programme in 1987. As growth became negative in that year, private sector incomes declined while civil servants’ salaries were maintained until 1993. During the period 1984–93 the wage bill rose from 5.5 per cent of GDP or 27 per cent of total revenue to 10 per cent of GDP and 64 per cent of revenue; by mid-1993 wage arrears had started accumulating. Increases in public sector wages also strongly influenced private sector wages. In 1987 the government began reducing its expenditure, beginning with cuts in capital and recurrent expenditure, particularly

civil servants' amenities (Amin 1998). Politically it was much easier to cut public investment expenditure, which did not directly affect civil servants' salaries. But the investment cuts were very detrimental to the country later on as the record shows. Initially, the government was reluctant to curb recurrent expenditure and reform non-productive public enterprises, so that the investment component of public expenditure bore the brunt of adjustment. The austerity programme was partly to reconstitute public savings and restore budgetary balance. But was this the right type of adjustment and sequencing to undertake? The largest budgetary cuts led to the removal of the extra-budgetary expenditure with a variety of recurrent and capital expenditures, a freeze on the wage bill, and reduction in subsidies and transfers. But this was with increased interest payments on debt and higher sales tax on petroleum products and alcoholic beverages.

By the beginning of 1993, with no further options, there were public sector wage cuts of at least 15 per cent; by the mid-year, wage arrears had started accumulating and by the end of the year, a drastic salary cut of up to 60 per cent (of what remained of the initial cut of that year) was implemented. Further reduction in the civil servant wage bill through staff cuts and downsizing was also carried out. The workers to some extent painfully contributed in financing the adjustment process. Many civil servants ended up earning less than 50 per cent of their pre-1993 salaries. The purchasing power of government workers further worsened after the 1994 devaluation, which was also accompanied by tax increases in some sectors. Calculations have shown that between 1992 and 1995 the real wages of civil servants in Cameroon dropped by 75 to 80 per cent (OECD 2000/2001). Cuts in basic salary and fringe benefits and further erosion of civil servants' purchasing power have certainly had serious negative effects on the behaviour of many civil servants.

In general, measures adopted to streamline the public sector and encourage the private sector included price liberalization and public service and financial sector reforms that started in 1988/89. By 1994 civil service employee numbers stood at 170,000 persons, with 42,000 in the security forces (World Bank 1995). Adjustments were strongly based on internal measures. To raise revenue, the government implemented customs and indirect tax reform in 1994, wage restraint, including no increase in non-wage expenditure, and reduction of public sector investment even where appropriate public investment was called for. There were no rigorous analyses of the situation to give informed inputs into the policy process. Up to June 1995, total adjustment was made difficult because of the drop in oil revenue. This fell sharply from CFAF 110 billion in 1992/93 to CFAF 62 billion in 1993/94 as output dropped from 8.9 million tonnes in 1985/86 to 5.8 million tonnes in 1993/94, along with a weakening of oil market prices. Also, the National Oil Company (SNH) had to pay its short-term borrowing and finance charges, amounting to over US\$200 million. Measures were taken to increase revenue. The early 1990s witnessed the general liberalization of the economy. Significant trade liberalization measures were carried out. Tariffs were reduced well below the levels agreed by the Central African Custom Union, and quantitative restrictions were eliminated, with a reduction in

exemptions. Tax resources from international trade increased to CFAF 115 billion in 1994/95, 40 per cent above the 1992/93 level. Individual income tax fell, but corporate tax increased as did profit tax receipts. General tax revenue increased, although in 1991 civil disobedience and social unrest led to a reduction of government revenue. However, internal adjustment seemed to have run its full course by the end of 1993.

In an attempt to limit capital flight from the franc zone, in August 1993 the convertibility between the franc zone and France was suspended and in September between the two franc zones, Banque des Etats de l'Afrique Centrale (BEAC) and Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO). This marked the beginning of external adjustment, and the process continued in January 1994 with the 50 per cent devaluation of the CFA franc vis-à-vis the French franc, with the principal aim of promoting economic recovery through boosting exports and home-grown industries. Exports, of mainly primary products, increased after 1993 (Table 5.3). The state authorities knew that devaluation was coming but did not adequately prepare for it, particularly in finding ways of damping the effects for vulnerable groups or coordinating the introduction of devaluation.

Why did the State Intervene so Heavily?

The colonial authorities had established agricultural marketing boards, public companies and other structures to extract the maximum resources, goods and services. With independence, the new government expended and intensified the state's intervention in the economy. In most cases there was a shift from colonialist institutions both public and private to the African government since the African private sector was virtually non-existent. The public companies were then supposed to fill the entrepreneurial gap. But with time, these parastatals became also a state patronage system that provided well-paid jobs for supporters of the regime.

The economic rationale was essentially based on market failure. Markets operate for the benefits of the participants. The actors in the market perform their functions for the profit motive. The market cannot therefore function well when the producers cannot make any gains. When public goods and externalities are concerned the market fails to produce those public goods and services that may also involve externalities. In cases of public utilities, such as electricity, water supply and communication, private sector provision would be suboptimal, hence public intervention was necessary. With time most of the public companies have become highly inefficient, incurring heavy losses and providing poor-quality goods and services. They have then become a heavy burden on the state budget.

To correct this situation, a reform package has been put in place mainly to privatize or in some cases liquidate these companies. But the conditions for successful reform and proper implementation of the reform package were lacking. Neither were the right conditions created. For example, privatization came without any appropriate regulatory framework or functioning financial system such as a stock exchange.

Table 5.3a: Production: Cocoa, Cotton and Coffee (Metric Tonnes)

Year	Cocoa	Cotton	Robusta coffee	Arabica coffee
1961	77,000	29,200		
1962	72,600	25,100	34,400	
1963	75,800	41,400	34,900	13,800
1964	86,900	45,600	34,700	12,600
1965	87,900	44,000	32,300	14,600
1966	75,700	57,500	48,900	21,300
1967	85,900	55,800	42,600	20,400
1968	96,600	49,100	56,000	21,300
1969	103,900	68,000	51,500	21,500
1970	108,300	91,300	58,300	23,700
1971	112,000	38,500	50,000	26,200
1972	124,300	43,200	63,400	30,500
1973	106,900	45,300	62,900	31,800
1974	110,500	27,800	67,000	33,100
1975	118,000	40,000	80,000	32,300
1976	96,000	49,500	57,200	27,811
1977	82,500	47,800	62,100	21,717
1978	107,000	40,700	64,400	16,683
1979	110,900	59,500	80,900	27,100
1980	123,200	80,300	71,600	28,300
1981	117,100	84,200	87,000	25,200
1982	114,697	79,819	71,638	25,585
1983	114,156	72,368	87,639	19,543
1984	111,327	94,580	78,112	24,543
1985	121,071	97,500	84,349	21,785
1986	115,082	115,542	87,573	17,281
1987	134,426	122,773	75,895	13,528
1988	135,116	113,699	95,265	17,567
1989	128,606	165,432	89,658	17,394
1990	100,576	103,879	100,883	14,139
1991	112,077	113,835	76,000	10,499
1992	109,000	114,362	97,835	17,231
1993	93,278	125,843	37,715	10,210
1994	100,092	126,648	62,000	8,400
1995	107,070	165,737	49,067	6,196
1996	136,000	195,000	60,000	12,000
1997	126,000		85,000	19,000
1998	127,000		62,000	11,000
1999	125,000		93,000	19,500

Source: The data were derived from a variety of sources: *Annuaire Statistique*, 1983; Cameroon Agricultural Sector Report, 1989 and 1987 (World Bank); *Cameroon in Figures* (various issues); Direction de Statistique et Comptabilité Nationale; Les Cahiers d'OCISCA No. 11, 1994; *Annuelle de Statistique* (various issues); Programmation monétaire (BEAC Zone).

Table 5.3b: Production: Other Products (Metric Tonnes)

Year	Bananas	Rubber	Tobacco	Palm oil	Palm kernels	Sugar	Timber
1971	93,500	12,000	4,400	24,200		38,900	93,500
1972	95,300	13,900	2,214	23,373	9,600	36,400	95,300
1973	95,800	17,096	2,548	33,800	14,200	15,248	95,800
1974	96,400	14,471	2,973	40,700	28,394	19,053	96,400
1975	104,000	15,261	2,896	37,456	12,327	25,889	104,000
1976	85,700	17,846	2,810	40,419	9,296	27,159	85,700
1977	82,500	15,687	3,078	37,385	10,468	31,000	82,500
1978	80,800	18,508	2,823	36,507	7,600	36,180	80,800
1979	78,300	17,635	2,937	35,837	7,272	44,938	78,300
1980	75,800	15,735	1,897	51,509	1,331	58,000	75,800
1981	55,400	18,022	1,833	70,285	24,900	59,773	55,400
1982	49,300	17,566	2,035	73,400	14,812	65,855	49,300
1983	50,900	15,995	1,625	61,398	12,1446	7,920	50,900
1984	76,300	16,413	1,641	82,015	15,293	58,655	76,300
1985	79,000	17,679	1,709	79,191	15,018	73,717	79,000
1986	55,402	19,246	2,174	104,745	15,894	93,840	55,402
1987	49,395	22,506	2,502	88,611	14,046	92,743	49,395
1988	33,974	29,727	1,691	95,166	15,283	87,207	33,974
1989	47,441	30,709	1,158	162,000	17,145	67,524	47,441
1990	68,656	37,364	748	101,956	19,015	66,872	68,656
1991	93,000	3,9487	844	99,038	17,728	40,004	93,000
1992	113,000	45,018	155	99,660	18,946	56,006	113,000
1993	133,000	47,589	1,200	107,284		85,016	133,000
1994	167,000	50,650	1,200	100,000		85,000	167,000
1995	186,500	55,500	1,200	100,000		85,000	186,500
1996	250,000	55,000	1,200				250,000
1997	280,000		1,690	92,260	15,798	86,556	
1998	298,000		1,900				
1999	198,000						
2000	240,000						
2001	250,000						

Source: The data were pieced together from a variety of sources: *Annuaire Statistique*, 1983; Cameroon Agricultural sector report 1989 and 1987 (World Bank); *Cameroon in Figures* (various issues); Direction de Statistique et Comptabilité Nationale; Les Cahiers d'OCISCA No. 11, 1994; *Annuelle de Statistique* (various issues); Programmation monétaire (BEAC Zone).

Table 5.3c: Timber Production By Volume (M³)

Year	Log volume (m ³)
1986/87	2,090,596
1987/88	1,970,490
1988/89	2,120,603
1989/90	2,776,275
1990/91	2,283,968
1991/92	2,111,029
1992/93	2,010,000
1993/94	2,700,000
1994/95	2,790,903
1995/96	2,804,932
1996/97	3,500,000
1997/98	3,600,000
1998/99	3,500,000
1999/00	2,900,000
2000/01	2,250,000

Source: Cameroon in Figures (various issues); Annuelle de statistique (various issues).

Table 5.3d: Petroleum Production and Export ('000 tonnes)

Year	Production	Export
1980	2,700	1,612
1981	4,340	1,582
1982	5,331	1,872
1983	5,626	1,996
1984	7,400	1,213
1985	9,170	7,700
1986	8,800	7,300
1987	8,348	7,700
1988	8,295	7,300
1989	8,114	5,929
1990	7,835	7,410
1991	7,235	7,001
1992	6,790	6,620
1993	6,600	6,170
1994	5,810	3,830
1995	5,380	3,220
1996	5,200	3,110
1997	5,100	2,950

Source: BEAC, Rapport d'activité 1987–1996; The Economist Intelligence Unit, Country Analysis 1997, 1998.

Table 5.3e: Producer Prices: Cocoa, Cotton and Coffee (CFA francs)

Year	Cocoa	Cotton	Robusta coffee	Arabica coffee
1961	80	27		
1962	75	28	95	
1963	70	28	90	180
1964	72	27	105	180
1965	80	27	127	180
1966	45	26	100	180
1967	55	25	115	200
1968	55	28	115	170
1969	70	28	117	168
1970	85	30	125	200
1971	85	30	125	155
1972	90	30	125	165
1973	90	31	130	175
1974	100	31	135	200
1975	120	38	135	140
1976	130	43	145	150
1977	150	43	195	180
1978	220	55	250	275
1979	260	65	280	300
1980	290	65	310	330
1981	300	70	320	340
1982	310	80	330	350
1983	330	100	350	370
1984	370	105	390	410
1985	410	117	430	450
1986	420	145	440	475
1987	420	155	440	475
1988	420	155	440	475
1989	420	155	440	475
1990	250	155	175	250
1991	250	110	155	250
1992	200	110	155	250
1993	150	110	100	200
1994	300	110	270	550
1995	450	113	680	900
1996	340		630	500
1997	435	160	500	750
1998	650	170	500	500
1999	300	175	614	727
2000	336	180	432	525
2001	465	190	270	495

Source: The data were pieced together from a variety of sources: *Annuaire Statistique*, 1983; Cameroon Agricultural sector report 1989 and 1987 (World Bank); *Cameroon in Figures* (various issues); Direction de Statistique et Comptabilité Nationale; Les Cahiers d'OCISCA No. 11, 1994; *Annuelle de Statistique* (various issues); Programmation monétaire (BEAC Zone).

Within a good macroeconomic framework, competitive market pressure generates efficiency and makes firms efficient. But given a weak domestic private sector, privatization of public utilities meant a transfer from public monopoly to private foreign monopolies with generally poor outcomes and to the detriment of the population. Privatization has not been properly introduced; no rigorous analysis has been done in many cases; no regulatory framework has been established for the proper functioning of the privatized firms or to look to the welfare and interest of the population. In most cases the result has been poor services at high prices. This is not what privatization was meant to produce. Instead, the institutions (with appropriate regulations and supervisory powers) have to be created and strengthened for building the right environment to enable the domestic private sector to flourish.

Economic Sector

Examining the economy in terms of the traditional economic sectors – primary, secondary and tertiary – underscores the importance of each of them in the transformation and performance of the overall economy. Typically, agriculture, industry/manufacturing and services have represented these sectors, respectively.

Primary (Agricultural) Sector

Agriculture is a national priority in Cameroon. In its national accounts agriculture is classified as the primary sector; it includes livestock, hunting, fishing, forestry and logging, and crops. These are also subdivided into sub-sectors. For instance, the crop sub-sector includes crops produced mainly for export and crops produced mainly for domestic consumption.

The period 1960–76 witnessed a strong agricultural sector with great potential in a wide variety of raw materials but with modest production techniques. But, dominated by smallholder production, the sector was and is greatly in need of modernization and increased productivity, with very low yields the consequence of low-level production techniques and primitive equipment. The small-scale farmers engage mainly in subsistence farming, but a modern sector made up of large plantations managed by both public and private enterprises exists alongside the traditional mode of farming.

In a developing economy like Cameroon, agriculture is generally considered the important sector, providing and generating crucial interlinkages with the growth of other sectors and the whole economy, so that the growth of other sectors may depend on the primary sector. The major structural feature of agriculture is its dependence on natural resources, with land productivity a critical factor. Agriculture dominates in terms of labour (employing more than 60 per cent of the labour force) and a potentially high growth rate, which may kick-start with modernization and transformation, thus underscoring the relationship with industry and other sectors.

Cameroon's economy is one of the most diversified in Sub-Saharan Africa (SSA). Potentially Cameroon is one of the richest countries in SSA. It was classified as a middle-income country in the early 1980s, and its endowment or resource base has

not changed since then. In addition to its human and huge extractive resources, it is a net oil exporter as well as producer and exporter of cocoa, coffee, cotton, timber, bananas, tobacco, rubber, palm products, sugar cane, aluminium and food crops of all sorts (Table 5.3). The production of coffee (robusta and arabica), cocoa and cotton fluctuates but with an upward trend. A noticeable increase is observed as from 1994, when production moved sharply upwards. Banana production went up especially after 1988, and rubber production increased slightly after 1988. Tobacco production had an upward trend and timber production a downward trend, although after 1994 its production increased sharply. Sugar, palm oil and palm kernel production increased throughout the period, with palm oil production shooting up between 1988 and 1991. Palm kernel production stabilized at a lower level than that of palm oil. Production mainly for domestic consumption (subsistence crops) includes sweet potatoes, yams and cocoyams, plantains, cassava, maize, millet and livestock.

Generally, world commodity prices fluctuate more than FOB prices and producer prices, as can be seen from figures for producer, FOB and world market prices for cocoa, coffee and cotton (Table 5.3e). FOB prices moved together, while producer prices moved together at lower levels. But not enough has been done to enhance agricultural production or productivity, given the great agricultural potentials. The reforms have still to tackle the fundamentals partly because of a weak institutional framework.

Agricultural Policy Reforms

There have been major policy changes in the agricultural sector that purported to improve the performance of the sector, which is the main support of the economy. The liberalization and privatization policies have been geared towards disengaging the state from the production and commercialization of agricultural products. Between 1988 and 1992, there were sharp reductions in the agricultural budget along with a reduction in the national budget. Previously the government subsidized agricultural inputs such as fertilizers, pesticides and insecticides. But during this period these subsidies were completely removed, and farmers had to face the market price for these inputs and as such reallocate their resources accordingly.

Furthermore the state completely withdrew from the commercialization of Cameroon's major export crops – cocoa, coffee and cotton – by liquidating the National Produce Marketing Board (NPMB), which was responsible for the trading of these crops. The state's responsibility for purchasing the crops from farmers and the international sale of the crops were shifted to the private sector. This has produced poor results as the private sector was not well prepared to assume such responsibilities. The National Office of Cocoa and Coffee (NOCC), which replaced the NPMB, was meant to control quality and collect data/information on these crops, but has not properly performed its functions. The farmers were then faced with not only the market price of inputs but also with an uncontrolled product market and unscrupulous private buying agents. The results were reduced output and poor quality of output. Even the marketing boards could have been better managed and function

properly for the benefit of the producers/farmers if the government had carried out proper restructuring and the producers/farmers had become the real shareholders in the institutions. The situation of commodity commercialization would then have been different from the current poor performance of the cocoa and coffee production and marketing.

The government has encouraged farmers to organize themselves into production, sales and savings groups such as co-operatives, credit and savings associations. This is with aim of promoting the mobilization of resources, increasing production and productivity in the agricultural sector as stipulated by the 1992 co-operative law. Yet many institutional and structural problems still have to be addressed.

Many state-owned corporations and firms have been liquidated or privatized, and some are in the pipeline for privatization. The rationale is that the market performs better in the production and provision of goods and services. So by shifting these activities to the private sector, resources would be better allocated, greater production would be achieved, producing greater welfare than when the state was performing those activities. Yet this does not take into consideration public (including institutional and policy) failure as well as market failure. There are certain areas or activities where neither the public nor private sector of itself can do better than the other. Necessary institutional structures and regulations are required for the proper functioning of both sectors and consequently the economy.

Other Agricultural Reforms

Within the structural adjustment loan, the World Bank's role in liquidating the marketing board was highly significant. Even the roll-out of the policy reforms in this sector was detrimental to the producers. First, subsidies were removed between 1988 and 1992. Then producer prices were reduced by almost 40 per cent by the marketing board in 1990. This further pushed the producers into diverting resources to other sub-sectors in the agricultural sector. The 1994 devaluation, which generally doubled the nominal cocoa and coffee prices, did not stop a production decline. The previous years' policy regime had led to a sharp reduction in production capacity. No new cocoa and coffee seeds were planted, and there was zero new investment in the sub-sector. It followed that there was no significant increase in cocoa production to match the high increases in cocoa output in other competing countries. For example, within the same period cocoa production grew in Côte d'Ivoire by over 600,000 tonnes and it is currently the world's top cocoa producer. The situation would have been different for Cameroon's producers had the policy reform content and sequencing been different. According to Essama-Nssah and Gockowski (2000), a better roll-out would have been CFA devaluation before the liquidation of the marketing board and liberalization of cocoa and coffee marketing, then finally, removal of subsidies. Côte d'Ivoire seemed to have followed such a sequence, but such were the country's pressing problems that Cameroon was pressurized by the World Bank. Cameroon would have done better instead with proper restructuring, and with the state's support of the sector; and it would be doing better now. After all,

the developed countries strongly support their agricultural sector for the benefit of their population. In fact, the development of the agricultural sector in the Western world has been strongly based on public support.

In 1990, as part of the state's attempts to improve agricultural performance, the government merged the two main agricultural research institutions to form the state-supported Institute of Agricultural Research for Development (IRAD). It has as its main objective developing and carrying out research programmes on all crop improvements, agronomy and forestry. At the same time it is tasked to disseminate its research output with the principal aim of increasing agricultural production and productivity. But IRAD has not yet effectively attained these objectives. Its performance may be linked to achieving other objectives, including to increase the income and productivity of small-scale agricultural producers. This should be done by creating the appropriate technology, and disseminating or transferring the technology for increased production and product transformation. But more resources need to be committed to achieve these goals in addition to removing other constraints. The state has to commit the necessary resources, and IRAD has to utilize its resources more efficiently.

Structure of Trade

The trade structure of Cameroon is very varied but is dependent on primary products – there are many primary products but very few manufactured goods. Oil now contributes less 11 per cent of GDP and a third of exports. Timber is also quite important, accounting for 15 per cent of all exports (Table 5.4). There has been a rise in imports while export trade in non-oil exports has stagnated. On the whole the balance of payments is negative (see table). There has been a neglect of traditional export crops from both the government and the producers. Producers are discouraged by low producer prices and weak institutions and infrastructures, which badly need improvement for the proper production and commercialization of the crops. Cameroon's economy is also constrained by limited and feeble financial institutions. Although the co-operative credit groups mobilize savings from the population and the small commercial banks grant loans to large and medium-sized firms, those seeking long-term financing and help for small-scale activities are not well served.

The devaluation of the CFA franc was supposed to promote economic growth, since devaluation relates to domestic prices and costs and tends to make imports more expensive than exports, therefore encouraging exports. There was an increase in the output (or production) of the major export commodities (cocoa, cotton, bananas and timber) after 1994. Since the domestic consumption of these commodities is negligible, it can be assumed that they were being produced for primary exports, which unfortunately do not incorporate many manufactured goods. Historically, no country has developed without transforming its primary products for exports. As it stands, even in the short run the devaluation seemed to have improved output growth, without any structural changes, although the increase in price of imports initially increased the general level of prices.

The Secondary Sector

Cameroon's secondary sector is relatively diversified. It consists of the extractive industries (including mining and quarrying), industries involved in the transformation of raw materials, the food and beverage industries including the sugar industry, the cement industry, the aluminium industry, textiles and leather industries, woodland and wood products, chemical and chemical products, electricity, gas and oil refinery products, public works and construction. Today about thirty large enterprises dominate this sector in Cameroon, with a few medium-sized enterprises and many small businesses employing fewer than ten persons. The major industrial organizations include Alucam (aluminium), Cimencam (cement), SONARA (national refinery), SosuCam (sugar) and Cicam (textile and clothing manufacturers). There are also large agro-industries that harvest primary products and transform some of the products into basic manufactured goods. This sector is supposed to produce much value-added output, especially from the primary sector, and contribute greatly to the transformation of the economy. Initially, as the government created institutions to contribute to promoting industrialization, the provision of funds for small and medium-sized enterprises became crucial. The government set up the National Investment Corporation (SNI), which became a big holding concern. Hence in the 1970s and early 1980s industrial and manufactured output rose sharply. Today, industrial production is in a general decline. The beverage (particularly beer) industry is one of the very few to record a continuing increase in production and sales. Part of the decline is owing to the high cost of inputs, ageing production plants and obsolete technology. This area, therefore, has greater room for improvement and growth potentials, with serious implications for increased production, productivity, competitiveness and socio-economic development.

Between 1964 and 1985, the secondary sector grew on average at about 10 per cent per annum. The high industrial growth led to the industrial labour force increasing by 20,000 workers for the period 1980–84. There was a high demand for labour, and the labour cost increased. Hence production activities tended to be more capital-intensive in this sector during this period. During the downturn the labour force declined just as rapidly. With lay-offs and liquidations in 1988, the industrial wage bill was CFAF 24.3 billion, but this fell to CFAF 13 billion in 1994/95, a decline of almost 50 per cent (UNDP 1998). While the importance of market access is usually stressed, it remains to be seen how both regional and other markets can be exploited, as most of the regional markets are not developed partly owing to institutional and infrastructure constraints. It is generally the manufacturing sector that adds most value to a country's output. And that is why strong support should be given to this sector in order to generate the appropriate sustainable development.

The Tertiary Sector

The tertiary sector covers trade, hotels and restaurants, tourism, transport and communications, financial activities, property and public administration. The service sector embraces a wide spectrum of economic transactions: transactions carried out

in offices, outside offices through beauty salons, for example, insurance activities, and international transactions. It is often difficult to measure the contribution of services to the economy because of their intangible nature. Initially Cameroon's tertiary sector grew faster than the increase in manufacturing/ industrialization. Yet local industrial expansion did not necessarily follow improved techniques in agricultural production, as agriculture largely remains a mass of small-scale producers using basic agricultural equipment. The tertiary sector has also enormous potential. For example, the tourism industry is still highly underdeveloped, needing the right infrastructure to kick-start it.

The public sector is a large component of the service sector, and it initially absorbed much of the graduate population. Until the late 1990s, Cameroon's educational system (particularly tertiary education) tended to feed into the already saturated tertiary sector (particularly the public sector) of the economy. The tertiary sector therefore has tended to have a relatively very highly educated labour force, which may partly explain why the wage rate in the tertiary sector is relatively higher than in other sectors. Initially, salary scales were established according to level of education or educational qualification, and not according to skill level or performance. The public sector as part of the tertiary sector in Cameroon has been involved in producing tangible goods, including consumer goods, besides providing services. On the whole, the public sector has been regarded as hindering the proper performance of the economy. This sector is now considered to be too large and inefficient. In the broad sense, this sector provides or should provide facilitating activities. The sector should acquire the relevant skills in order to become more efficient and effective for the proper performance of its activities.

Inter-Sectoral and Intra-Sectoral Shifts

A shift from agriculture to manufacture/industry is one characteristic of economic development; another is the expansion of the service sector especially in terms of employment and output. The service sector then absorbs workers (and provides them with necessary skills) from the other sectors. Labour productivity (output/worker) tends to grow more slowly in the agriculture and service sectors than in the manufacturing/industrial sector. Increase of employment share in the secondary sector may mean movement of labour from agriculture to the manufacturing/industrial sector.

According to Engel's Law, as income grows people tend to spend relatively smaller proportions of their income on food (the demand-side effect). This means that as incomes increase, people spend a greater and greater proportion on other things, such as manufactured goods and services. On the supply side, productivity growth in agriculture permits production of more food with fewer workers, resulting in a decline in employment in agriculture. So both demand and supply effects shift or should shift employment from agriculture to manufacturing/industrial sectors. The sector also releases workers into the service sector. Hence there is an important link between agriculture and other sectors. But in the case of Cameroon, the secondary

sector has not been able to absorb the labour force from the primary sector, and the labour force absorbed by the tertiary sector has been less productive, to say the least. Education and training are necessary to provide the appropriate skills. Effective performance of each sector would generate greater output and consequently an improved welfare of the population.

The Oil Boom and Investment

In the late 1970s Cameroon was said to have responded well to positive trade shocks. It avoided overspending and reduced import demand. The economy was regarded as well-managed. Given the fixed exchange rate regime of the CFA franc zone extra spending on imports led to a trade imbalance. There was exchange rate appreciation, thus increasing the domestic price of goods and services, since the prices of non-traded goods are determined by domestic demand and supply. Hence cheaper imports also increased the deficit in the balance of payments. Cameroon's fiscal restraint was applauded, but it was in the form of oil revenue saved abroad, while at the same time domestic credit was quite low. It is estimated that about 75 percent of Cameroon's oil revenue was saved in American banks in dollars (Fielding 1995). It has been difficult to determine the actual size of the revenue, with the World Bank giving the magnitude as three times greater than the official government figures.

Before the economic crisis, the economy generated considerable oil resources. Could the economy have performed better, if the revenue were put into other uses than foreign assets? There were other options open to the government for better management of its resources. Moreover, there was restraint on domestic investment. There were insufficient investment funds, a position that was worsened by financial repression as reflected by the very low domestic interest rate relative to the high level of income (Bekolo-Ebe 1986). Gross domestic savings were high partly because of the high state savings. What form should savings take in order to effectively influence investment? Saving abroad did not and does not mean that borrowing abroad could be easily done. During that period Cameroon saved much abroad but its private sector could not borrow abroad for investment purposes. The government's oil revenue was put into foreign assets. This policy greatly affected the amount of financial resources left for domestic investment as the estimated annual oil revenue was CFAF 300 billion by 1985 (Devarajan 1991). Acquiring foreign assets at that period was also risky partly because of exchange rate volatility; acquiring French assets would have been less risky because of the fixed exchange rate regime and also because much of the trade in goods and services was from France.

It has been shown that acquiring foreign assets was suboptimal; it would have made better economic sense to put the oil revenue into domestic investment activities. The yield from foreign assets was minimal (Fielding 1995). There were other options open to the government to put their windfall to better use. First, the revenue could have been put into foreign assets, which are high-yielding. Second, it could have been used to import capital goods, but not consumption goods. Third, the resources could have been used to increase the available bank credit for domestic investment

or to develop and strengthen development (financial) institutions. The last two options made much economic sense. But why did the state instead acquire foreign assets in American banks with a very high and volatile exchange rate? The CFA Central Bank's regulations restricted the policy choices of the Cameroonian authorities and to a very great extent prevented them from using other viable options. The CFA franc zone regime, therefore, inhibited Cameroon's economic growth through its regulation, which also restricted domestic credit facilities. In some instances, member states of the CFA franc zone have found ways to evade the regulations, but these methods have produced suboptimal outcomes.

The Bretton Woods Policy on Loans

Previous accords with the IMF and the World Bank went off-track in the late 1980s and early 1990s. Between 1985 and 1997 Cameroon received very little in the form of soft loans. Then in the 1980s oil prices collapsed, external debt accumulated and became a heavy burden on the economy. Estimates show the debt to be about 127 per cent of GDP, with debt servicing making up about a third of the budget at that time. Because of institutional weaknesses and with the country being unable to meet the structural adjustment conditions the international financial bodies did not supply the necessary credit between the late 1980s and early 1990s. Declaring Cameroon eligible for the Enhanced Highly Indebted Poor Countries Initiative (HIPC I) helped the country to lighten the debt burden on the economy; with the country reaching the decision point in October 2000, it obtained US\$ 2 billion debt cancellation. Cameroon is now finalizing its poverty-reduction growth facility plan through the Poverty Reduction Strategy Paper (PRSP). But the 1994 devaluation of the franc also permitted Cameroon to resume dialogue with the IMF and World Bank with the aim of promoting economic growth. Data seem to show an increase in output growth rate after 1994, although the level of poverty increased.

Linking a poverty-reduction programme with debt-relief programmes poses considerable problems. The amount of resources to be released from the HIPC Initiative is minimal if it is to fulfil the target of halving the poverty in Cameroon by 2015. It is, therefore, important to generate and mobilize both internal and external resources. One could go further to say that Cameroon is not poor in resources, and with its huge resource base properly managed it could become a donor to other countries.

Stabilization and the Structural Adjustment Programme

The stabilization and structural adjustment programme (SAP) mandated by the Bretton Woods institutions were initially forced on the Cameroonian authorities. The government had little say in this, yet implementation was to be carried out by the government. Here was a weakness right from the beginning. Both packages were to correct external and internal disequilibria as reflected in the balance-of-payments and budget deficits (Table 5.4).

Table 5.4: Cameroon: Balance of Trade

Year	Trade Balance	Current Balance	Capital Balance	Overall Balance of Payments
1967	-7.45			
1968	2.30			
1969	6.42			
1970	-2.90	-13.80	9.10	9.90
1971	-12.10	-13.80	10.50	-3.10
1972	-18.70	-24.21	15.80	-13.50
1973	7.30	-27.00	7.20	-6.30
1974	14.40	-25.60	2.90	-15.70
1975	-26.00	-39.20	13.80	-20.20
1976	-18.70	-33.00	25.10	2.50
1977	-13.10	-23.80	16.50	-0.50
1978	-39.20	-43.73	29.45	-12.38
1979	-27.50	-27.23	43.26	-8.10
1980	-46.90	-82.66	133.04	24.00
1981	-86.37	-105.31	81.04	-23.70
1982	-46.35	-153.70	143.40	-15.00
1983	-94.75	-130.50	201.80	71.10
1984	-103.10	-108.78	89.19	-50.10
1985	-187.01	-294.53	229.73	17.10
1986	-318.80	-107.20	170.08	61.20
1987	-277.41	-268.32	100.12	151.70
1988	-103.61	-128.03	15.47	-102.30
1989	-3.75	-175.09	58.92	-146.00
1990	163.96	-123.36	-61.74	-172.00
1991	186.43	-129.36	-61.74	-211.05
1992	179.34	-168.07	-98.14	-241.14
1993	221.29	-250.12	-115.20	-320.67
1994	275.21	-173.20	98.20	-294.00
1995	291.60	-12.00	6.10	-415.20
1996	246.50	45.30	-209.20	-175.60
1997	305.50	-10.30	-237.4	-393.06
1998	275.90	-141.20	-62.00	-203.00
1999	100.30	-215.40	-83.10	-348.70
2000	186.30	126.20	-70.20	-27.80
2001	382.40			

Sources: *Etudes et Statistiques*, BEAC. 1992, 2001, 1999, 2000; Banque Centrale des Etats de l'Afrique Equatoriale et du Cameroun, *Rapport d'activité*, 1970, 1972, 1977; Rapport publié par le Secrétariat du Comité Monétaire de la zone Franc, 1977, 1978, 1980; *Annuaire Statistique du Cameroun*, 1983, 1998–2002.

These huge deficits were generated by inappropriate domestic policies and external shocks. The reforms were generally intended to alter borrowing habits and create

different investment priorities and consumption patterns. For example, the disequilibria were reflected in the differences in aggregate demand and supply, relative price distortions and structural rigidities, which tended to maintain supply below its potential. It was thought therefore that removal of these obstacles would improve resource allocation and enhance productive capacity. That is, stabilization would increase supply and contain demand while structural adjustment would improve the productive capacity, and so increase supply. Over time both packages were to greatly influence aggregate supply and demand.

For instance, devaluation should have at least two major effects: a switch in expenditure or a change of expenditure pattern because of relative price changes in traded goods and services, and a reduction in domestic spending owing to an increase in the price of traded goods. The prices of traded goods are determined internationally, and Cameroon is a price-taker. Hence domestic prices do adjust accordingly. It is therefore important to note that as the prices of non-traded goods do not change initially, they tended to increase because of the effect of the increase in the prices of traded goods. Equally because of non-price factors and structural constraints domestic resources do not easily shift from one sector to the other and prices tend to increase sharply. In some cases goods could not be moved from surplus areas to shortage areas. All these factors tended to complicate the reform process.

The Poor Reform Package

In the 1980s many African countries embarked on economic reforms strongly supported and promoted by the World Bank and International Monetary Fund. The standard IMF/WB adjustment position focuses on: (i) fiscal excesses, which also generate balance-of-payment problems; (ii) an overvalued exchange rate, which creates a tax on exports and provides an import subsidy, with entrenched interest groups being the main beneficiaries as they are protected and are able to generate hard currency through their actions; (iii) market supply and demand, which are reflected by prices and include wages rates and import prices. A frequently applied reform package attempts to restore external balance through a combination of internal and international policies. It imposes short-term measures to tackle the problem or crisis, which takes the form of a foreign exchange resource loss. This may come from large outstanding debts, very high inflation or from capital flight, and the response is the longer-term measure of a stabilization policy. In the case of Cameroon, the situation was inflation but overvaluation, and capital flight with high demand for imports mainly for consumption rather than investment purposes. Yet the same policies were applied.

The structural reform package addresses many policy issues, with the underlying premise that privatization, liberalization and deregulation remove all distortions, particularly price distortions. These measures then create an efficient market system, with the right price signals ensuring efficient resource allocation. It is assumed that in the final analysis a competitive market would replace a government's intervention measures, which gave highly misleading signals. The role of the government in an

economy was therefore to be limited while the private sector was promoted to ensure market-determined prices. With the private sector in place, the SAP would lead to increased production with mobilizing of resources mainly through commodity export expansion. The problem was that a viable private market sector did not exist in Cameroon. In fact the necessary institutions and structures did not (and still do not) exist for the proper functioning of the market, and there was no enabling environment for the private sector to flourish. Yet the structural reforms were supposed to create these institutions and structures.

The implementation of SAP in all African countries had the same basic principles. The private sector was supposed to flourish with high investment once privatization and macroeconomic policies were implemented. Yet private investment never picked up nor responded partly because of the very SAP policy, which in certain cases increased the price of investment (funds). The manufacturing sector has been very small portion of economic activities in African countries (including Cameroon) except in cases of extractive industry like mining and oil, which were and are enclaves in the economies and highly capital-intensive. There are no significant economic spillovers from these extractive industries. Furthermore the SAP emphasized the expansion of primary or commodity exports. The manufacturing sector was (and it is still) weak. The focus on export-led growth policies was on primary exports. Even the trade liberalization policy was detrimental to African farmers, who were priced out of the domestic market by imported cheap goods that were most often subsidized by the exporting countries. Imported rice, for example, was often much cheaper than the locally produced rice, as in Cameroon. Yet Cameroon's economic crisis was partly caused by an over-reliance on primary exports, with the inevitable fall and fluctuation of primary product prices and revenue instability. The SAP might have been inevitable but the way it was implemented has caused much hardship, and it has failed to generate the purported sustainable growth. After two decades of adjustment the expected growth has not been achieved. Most of the policies have failed.

In the 1990s good governance came to be the main focus, as lack of good governance is believed to be the cause of Africa's poor economic performance. Conceptually, good governance is closely related to such institutionalized values as transparency, accountability, an effective and efficient public sector, the participation of citizens, the rule of law and observance of human rights. Under governance, participation has become paramount. Different measures have been instituted with World Bank support to improve participation and information flows. In the preparation of recent documents for donors and the Bank's lending programmes, participation of all the stakeholders is required. So the public and private sectors and civil society with all its different groups are all collectively involved in the preparation of a Poverty Reduction Strategy Paper (PRSP). This is unlike previous documents, which were solely prepared by the Bretton Woods institutions, such as the Country Assistance Strategy (CAS) and Policy Framework Paper (PFP). PRSP is a participatory process that has brought poverty into the centre of development. Yet there is still a great

need to strengthen this process and make it fully participatory and fully owned as a country's strategy for development. The participatory approach of the PRSP could be institutionalized to make it more effective in other areas of national activities.

Conclusion

The economic policies implemented during the 1960s and 1970s produced good economic outcomes in the short run but did not ensure a sustainable socio-economic development in Cameroon, as seen in the economic collapse after the mid-1980s and the increase in poverty levels. Yet Cameroon had the resources to ensure sustainable development. The policies were based on a limited export base, mainly primary products for export with limited domestic consumption. Cameroon was producing much of what it did not consume and importing what it did not produce, but there were resources for production and exports. Foreign markets were and are still highly protected, such that both manufactured goods and primary goods from African countries were negatively affected. And the African goods had no easy or assisted access into developed countries' markets. Certain policies adopted overseas also greatly shaped the domestic policies in Cameroon. For example, the European Common Agricultural Policy and European Union cooperation agreements did nothing to improve the limited production base of source exporters but also sustained the production of goods with little or no value added for exports. The import substitution policy initiated to promote industrialization resulted in the establishment of largely inefficient and unproductive capital-intensive industries that could not even satisfy the domestic market. No proper investment was carried out in order to build up the appropriate capital stock for efficient productive capacity. In effect, no supporting structure was laid out for the private sector. The public sector did not develop but expanded extensively, particularly in terms of workforce, without being efficient and effective. In fact, the policies after the 1970s failed to create a good foundation for sustainable growth. Hence the fall in world commodity prices and the depreciation of the US dollar in which the Cameroon's exports were denominated triggered a disastrous outcome as the internal institutions and structures were weak and are still weak. Political reform is a leading requirement for sustainable development, with one looking forward to a day when an African politician wins a national election and the loser concedes with congratulatory messages to the winner.

Also markets cannot be competitive if the developed countries continue to make their markets inaccessible to the goods and services from developing countries such as Cameroon. Opening access to foreign markets creates and generates a sustainable domestic industrial base. On the other hand, institutions and structures must be built and strengthened to facilitate the production, transformation and commercialization of goods. A major challenge is how to incorporate and integrate the PRSP, for example, into a sound macroeconomic framework. It is important for Cameroon to set goals for the future and develop solid means for achieving those goals. That is, the plans of the early years have to come back but in different dynamics and within a sound theoretical framework. Things have changed and they will continue to change,

so the country's leadership should be proactive and visionary. There is a need to develop long-term plans, which fully incorporate the participatory aspects of poverty reduction. The country's socio-economic and cultural development plans should be based on a solid theoretical foundation, be fully participatory and enable ownership by the population with good governance.

References

- Amin, Aloysius Ajab, 1996, *The Effects of Exchange Rate Policy on Cameroon's Agricultural Competitiveness*, AERC Research Paper No. 42, Nairobi.
- Amin, Aloysius Ajab, 1998, *Cameroon's Fiscal Policy and Economic Growth*, AERC Research Paper No. 85, Nairobi.
- Amin, Aloysius Ajab, 1999, *An Examination of Sources of Growth in Cameroon's Economy*, Final Report, AERC, Nairobi.
- Amin, Aloysius Ajab and Jean-Luc Dubois, 2000, A 1999 Update of the Cameroon Poverty Profile: <http://www4.worldbank.org/afr/poverty/pdf/internal/docnav/01794.pdf>.
- Bekolo-Ebe, Bruno, 1986, 'Critique des Fondements Quantitative de la Politique Monetaire de la Zone Franc', *Revue Camerounaise de Management*, Vol. 4, No. 5, pp. 12–26.
- Cameroon, Republic of, *Five- Year Economic, Social, Cultural and Development Plans (1961–86)*, Yaoundé.
- Cameroon, Republic of, 1989, *Statement of Development Strategy and Economic Recovery*, Yaoundé.
- Devarajan S., 1991, 'Cameroon's Oil Boom of 1978–1986', Mimeo, Oxford University, Centre for the Study of African Economies.
- Devarajan, S. and J. de Melo, 1987, 'Adjustment With a Fixed Exchange Rate: Cameroon, Ivory Coast and Senegal', *World Bank Economic Review*, Vol.1, No 3, pp. 447–87.
- Essam-Nssah, B. and James Gockowski, 2000, *Cameroon: Forest Sector Development in a Difficult Political Economy*, Washington, DC: World Bank.
- Fielding, David, 1995, 'Investment in Cameroon, 1978–1988', *Journal of African Economics*, Vol. 4, No. 1, pp. 29–51.
- Subramamian, Shakar, 1994, *The Oil Boom and After: Structural Adjustment in Cameroon*, World Paper 67, Cornell Food and Nutrition Policy Program.
- UNDP, 1998, *Cameroon Human Development Report: Poverty in Cameroon*, Yaoundé: UNDP.
- World Bank, 1995, *Cameroon: Diversity, Growth and Poverty Reduction*, Washington, DC: World Bank.

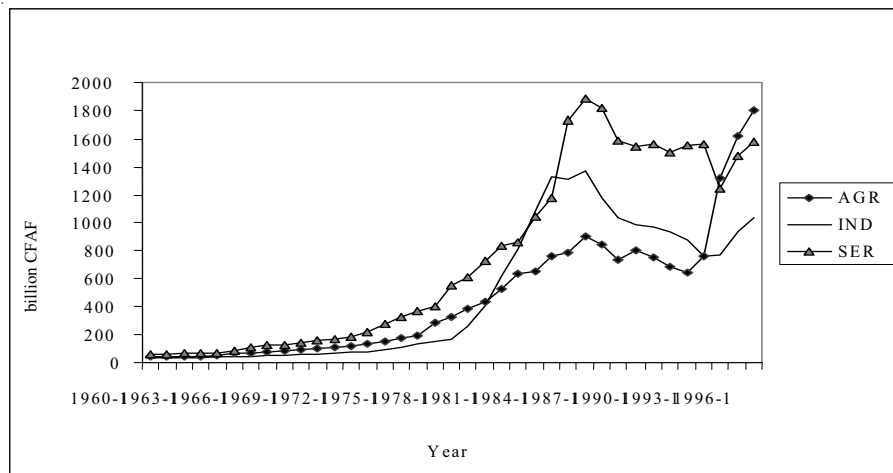
Sources of Economic Growth in Cameroon's Economy

Aloysius Ajab Amin

Introduction

Cameroon's economy performed very well for the period 1961–85, with agriculture supporting the economy during 1961–77 and petroleum production taking the lead in 1978–85. During these periods, Cameroon's economy was regarded as well managed and the country had one of the highest per capita incomes in sub-Saharan Africa. Cameroon had such a steady economic growth rate that it seemed to be unaffected by the external shocks of the 1970s and early 1980s. During the period when agriculture was the dominant economic activity, it accounted for almost 34 per cent of GDP, employing 80 per cent of the labour force, and providing 85 per cent of the country's exports. The share of industry was just 17 per cent of GDP. But after the mid-1970s, the share of petroleum output increased to 18 per cent of GDP. The economic growth rate was as high as 12 per cent per year for the period 1977/78–1980/81, and despite the high population growth rate (3.1 per cent) the per capita income was quite high. Public investment increased in this period, yet tended to be unproductive. To a large extent public expenditure in this area was wasteful (Subramanian 1994).

The manufacturing sector grew rapidly, while on the whole the agricultural sector was stagnant with varied rates of growth across commodities. The food production sector grew, while the export crop production sector declined. After more than two decades of rapid economic growth, Cameroon's economy collapsed in the mid-1980s (partly because of the sharp fall in world prices for its main export commodities and poor domestic economic management). The decline in the GDP was sudden and severe, from 8 per cent to less than –5 per cent per year for the period. Because the period of economic expansion was much longer than that for economic contraction and given the stylized facts, the magnitude of the economic decline was unexpected and devastating (see Fig 6.1).

Figure 6.1: Sector output growth (billion CFAF)

Source: authors calculations.

It has been shown repeatedly, particularly in the developed economies, that growth depends on the raising of factor productivity. And to increase factor productivity requires investment in human and physical capital and new technologies. Increasing labour productivity raises long-term growth in household incomes. Yet poorly conceived investment policies can result in unproductive or idle resources. The available scanty information on sub-Saharan Africa shows that labour productivity has grown very slowly. This is said to be partly related to the low rate of accumulation, and even the physical and human capital accumulated has often been less productive than in other regions of the less developing world. The environment seems to have failed in promoting investment and encouraged proper utilization of resources that can increase productivity (World Bank 1995).

Hence to overcome economic crisis and sustain economic growth, increased production and productivity must be at the centre of any economic recovery strategy. But to formulate strategies for achieving sustained increased production and rapid growth for poverty eradication, the relevant information is absolutely necessary. It is therefore important to break down or deconstruct the structure of Cameroon's economy and its growth rate, so as to have a better understanding or insight into those factors that have produced differences in growth rates in the various periods and sectors of the economy.

While much growth literature has concentrated on studying and measuring growth we still have little understanding on the sources of economic growth and the factors influencing these sources of growth – more so in African economies. To design sound macroeconomic policies and take rational economic decisions, appropriate

information is necessary. Much evidence shows that countries that have utilized their policy instrument properly and wisely have succeeded in achieving sustained rates of economic growth (Linderberg 1993). Taking or implementing proper economic policies also depends on decision-makers having the relevant inputs for their decision-making process, given the appropriate environment.

By 1985 in Cameroon oil share had increased to about 45 per cent of government revenue and 35 per cent of total exported goods (Table 6.1). Oil revenue enabled a rapid expansion of investment and growth in the non-oil sector. Hence our purpose in this chapter is to analyse and seek to understand the factors underlying the changes in economic activities, which in a way would be an attempt to assess the economic policies. Our broad objective is to identify and deconstruct the sources of economic growth and the factors that have determined the rate of growth or examine the forces behind these sources of growth. This is done at the aggregate level as well as at economic sector level. The sectors studied here are agriculture, manufacturing/industry and services. We assess and provide insights into the differences in the growth rates of the different sub-periods, including factor accumulation and factor shares in these periods, and estimate or calculate the total factor productivity and factor contribution both at the aggregate level and at the sector level for the overall study period.

Literature Review

Since the 1960s, the numbers of studies on the factors influencing long-run economic growth have greatly increased. Solow's work (1957) became the theoretical basis for these empirical exercises on the sources of economic growth. Solow's neo-classical growth model offered the theoretical framework for quantifying the contribution of traditional input and its total factor productivity to the gross domestic product (GDP). There has been considerable elaboration of the neo-classical growth model, making it much more responsive to policy factors. In the recent models or framework, technological change tends to be endogenous, implying that policy can have great impact on investment in both physical and human capital. That is, the appropriate policy regime of a country could greatly influence the growth rate of its economy. Hence economists have used various approaches depending on their objectives in studying the sources of growth in countries.

Studies have in general deconstructed the growth rate of aggregate output into two main components, one explained by the factor growth and the other known as the residual, or categorized as unidentified total factor productivity growth. What accounts for the residual has generated much empirical study and discussion. One explanation has been to embody the technological progress into the factors, thus adjusting for shifts in quality. Another approach, originally developed by Denison (1962, 1967), has been to add other possible explanatory variables such as economies of scale and structural change, thus reducing the portion attributable to technical progress. The literature reveals that many studies have been done on the economies of developed countries and very little on the developing economies, much less on African economies. Studies (World Bank 1989, 1995; Elias 1992) that have examined

the growth experience of developing countries show that the growth of labour and capital inputs and productivity changes of these inputs have accounted for the output growth. Only relatively few studies (e.g. Beaulieu 1990; World Bank 1991; Dike 1995; Onjala 1996; Shaaeldin 1989) on the sources of growth have been done on African economies. In his Nigerian case study, Dike (1995) concludes that GDP growth is largely attributable to changes in factor inputs, and the total productivity (TFP) plays a marginal role. That is, labour and capital changes contributed 94.4 per cent with only 5.6 per cent for TFP. Similar results were obtained in the case of Kenya (Onjala 1996). Sectoral analyses of the sources of growth give different results.

These studies further confirm the role of input growth in the variations of the rate of output growth. An examination of sector growth rates showed that while in the manufacturing sector the source of growth was less explained by total factor productivity, a very high proportion of source of growth was explained by the TFP in the agricultural sector. These studies follow Denison's attempt to break down the inputs in order to separate the effects of characteristics of labour and various forms of capital. Furthermore, the residual is deconstructed so that technical change is only a component of the residual.

Ghura's (1997) study of Cameroon's growth performance used an endogenous growth model. According to him investment, human capital and policy variables substantially influence economic growth. He categorizes investment as public and private investment, and regards both types as influencing growth. He adjusted the labour factor for human capital development. There seems to be some conceptual as well as methodological problems in this approach, although the results are somewhat plausible. Some of the right-hand variables were found to be non-stationary and therefore needed differencing. And because of cointegration, an error-correction model is usually required. But this is not the case.

In a World Bank (1995) study, it was observed that productivity growth was much slower in the developing countries than in the developed economies. In the countries examined for the 1970s, the use of capital made substantial contribution to changes to output. 'But the key to explaining the differences in the growth of output from country to country is the growth of productivity' (World Bank 1995:4). Accordingly the engine of growth and development is productivity. And technological progress drives productivity. Technological progress is influenced by many factors including education, institutions and policies. There is very strong evidence linking capital and the 'quality of economic environment'. Psacharopoulos (1991) shows that with education yielding high returns at the individual and social level, high returns are also reflected at the level of the economy. From his review of the literature he concludes that introducing human capital or the quality of labour into the production function has explained a large portion of the residual. This conclusion confirms Psacharopoulos' findings, which show that investment in education explained twice the percentage of economic growth in African countries as it does in the developed economies.

It has now been well established that long-term economic growth has been greatly influenced by the literacy or educational level of the population. Classic

cases are the examples of Japan, Korea and Taiwan where a good educational base provided the necessary institutions and infrastructure for industrial advances that generated economic successes beyond anyone's dreams (Lau and Klein 1990). In fact, the rising level of human capital in these countries will continue to increase the technological levels and promote the upgrading of industrial structures. Examining the sources of Chinese economic growth, Hu and Khan (1997) found that, contrary to the tradition, efficiency was the driving force behind the Chinese economic boom, with sharp productivity increases explained by economic reforms that started in 1978. Little was said about education. In general we need more information to explain the variation in contributory factors to output growth, especially as sector analyses may give different outcomes. More recently Easterly and Levine (1999) have stressed that most of the income and growth differences across nations are accounted for by the 'residual' – total factor productivity and not by factor accumulation. Factor accumulation tends to increase while growth does not. These stylized facts of economic growth seem to be observed in developed economies more than in the developing economies.

Research Problem

One important reason for carrying out economic research is to provide necessary input and guidance to the public (policy) decision-making process. In Cameroon, policy-makers lack the necessary empirical input and guidance to carry out rational economic decisions, since there are few studies on Cameroon's economy and few, if any, empirical studies exist to provide reasoned insights and guidance. The highly sustained growth rates of East Asian economies demonstrate the potentials of other developing economies to achieve such growth rates. Yet these potentials depend on appropriate economic policies, which are based on rigorous empirical studies. Since 1986, Cameroon's economy has been declining despite it achieving high growth rates up to the mid-1980s. Today, the greatest desire of the policy-makers in Cameroon is to see economic transformation, with a substantial increase in economic growth and development. In fact, the ultimate aim is to drastically reduce the poverty level, which has sharply increased because of the economic crisis (World Bank 1995; Cameroon 1989). But this cannot be done without a rapid rate of economic growth.

Most African countries have not experienced growth for some time. These countries have tended to operate very inefficiently, that is, operating inside their efficiency frontier rather than performing along their production possibility frontier. The growth-accounting literature depends on an assumption that the economy should be observed to be performing on its production possibility frontier (PPF) and not inside it. Very few developing countries would meet this assumption, and Cameroon's economy is no exception. A country operating inside its PPF may not increase its output by increasing its inputs, or increases in inputs may not lead to increased output. However, we can assume that even inside the PPF changes in the output are resulting from changes in other factors, including factor inputs.

Conceptual Framework

In studying the sources of growth two main approaches are usually used in the literature: parametric and non-parametric methods. The non-parametric approach involves the deconstruction of the gross domestic product (GDP) into its constituent parts. In addition formulas and ratios are used. According to Elias (1992:33). 'Output growth equals labour contribution plus capital contribution plus technological contribution, which is equal to labour income share by gross and quality growth of labour plus capital income share by gross and quality growth of capital plus technological contribution.' The parametric method uses the production function approach, where the marginal contributions of individual factors inputs and technical progress or total factor productivity are estimated. The flexibility in this method makes it possible for factor substitution and returns to scale to be empirically tested, although returns to scale are more relevant as a firm level concept. It has been observed that the rate of growth of output through time has been more than the growth rate attributed to the rate of growth in conventionally defined inputs such as labour and capital (Nicholson 1978).

The residual has generally been attributed to technical progress (TP), but TP involves many other elements as well, so it is not clear precisely how TP enters the production function. Also the inputs could be of different types. But because of the flexibility of the production function, different assumptions of whether it is neutral, biased or embodied can be made to accommodate technical progress. The inputs can also be disaggregated. The analysis can become very complex as we develop tools to deal with so many factors as well as collecting the relevant information for accurate measurement.

We use the production function to test the growth process and quantify the contribution of each source to the measured rate of growth. It is an approach that has been used extensively in developed economies, and recently the production function approach has been applied in developing economies. The use of this approach can be justified by its widespread use and the lack of a serious alternative. But we must also be aware of its limitations. Then, in using the production function, we carry out discussions in an analytical framework in a way that they become the means of testing hypotheses. In fact it is useful to have an idea of the contributions made by growth of inputs to measured output growth in the past. Knowing the rough contribution helps greatly in putting the growth discussion in perspective, even if we don't know why the growth of factor inputs and technical progress differ among countries or regions or across time periods. A desirable property of this approach is that the analysis of growth in aggregate is embedded in the production function concept of the theory of the firm, which offers its microeconomic foundation. Hence the aggregate output (Q) can be expressed as a function of factors of production and the existing technology. That is,

$$Q = f(LD, L, K, T) \quad (1)$$

(Land, Labour, Capital, Technology)

Here we can distinguish three broad sources of growth within the production function framework: changes in factor supplies, (increasing) returns to scale and technical progress. Technical progress is here used in a broader sense to include anything increasing the productivity of factors besides increasing returns. An important issue is how to separate empirically what a growth of factor inputs contribute to growth from other factors that lead to greater output. This includes technology such as the economy of scales resulting from technical change and increases in factor supplies, factor input quality improvement, knowledge advancement and improved factor organisations.

The Model

In advanced economies studies have indicated that the nature of technical progress suggests that the neutrality assumption is a fair working hypothesis. Studies show elasticity of substitution to be fairly close to unity; technical progress depends on factor accumulation, which can easily be accommodated into the Cobb–Douglas production function framework. For the elasticity of substitution to matter, the factor would have to grow highly at different rates, but studies show that it is always close to unity (Thirlwall 1994). And while the aggregation of inputs can pose serious problems since some of the inputs cannot be physically measured directly, techniques of aggregation have been developed to deal with the problems successfully in many studies (Thirlwall 1994). For practical purposes we define our aggregate production function implicitly as:

$$Y = A f(K, L) \quad (2)$$

where A can be regarded as an index representing total factor productivity for our purpose, and A being inside or outside the production function making not much difference to the final result. K is capital input and L is labour input.

For initial simple analysis we limit ourselves to two inputs. We could extend to as many inputs as possible. This aggregate production function relates potential output ($Y = \text{GDP}$) to the factor input levels of labour and capital, and multi-factors productivity (A). The multi-factor productivity concept embraces all variables that affect output for any given levels of factor inputs. It includes factors like human and physical capital improvements, technical progress and efficiency in allocation of resources. That is, the rate of output growth is influenced by the growth of factor inputs and improvements of factor productivity over time.

The Cobb–Douglas production function is usually used in fitting the aggregate data to empirically distinguish the three main sources of growth. The $C-D$ function is explicitly expressed as:

$$Y_t = A_t K_t^b L_t^a \quad (3)$$

where Y_t represents real output at time t , K_t is an index of capital stock or capital services all at constant prices, L_t is an index of labour input (or man-hours) at time t , b is the partial elasticity of output with respect to capital and a is a partial elasticity of output with respect to labour. (We assume changes in technology exogenous and independent of changes in the inputs.)

There is neutral technical progress. A , a and b are the estimable coefficients. The function would be constrained if values for these coefficients were assigned in advance. If $a + b < 1$, there is diminishing marginal productivity of factors. If $a + b = 1$, there are constant returns and if $a + b > 1$, there are increasing returns. Assuming $a + b = 1$ means constraining the function to constant returns, and increasing or decreasing returns being reflected in A , the total factor productivity index. Increasing returns biases A upwards. In practice the Cobb–Douglas production function is mostly used in its constrained form, where $a + b = 1$, with the values of a and b assigned according to the share of labour and capital in the national output (or income).

There is an underlying assumption of perfect competition where production is subject to constant returns and input factors receive the value of their marginal products and factor shares reflect the elasticity of output with respect to each factor. Both in less developed countries and developed countries perfect competition conditions seldom really hold. Yet empirically estimated values for a and b have not been markedly different from the factor shares of the national product, hence values for a and b are usually assigned on the basis of their factor shares. So in separating the main sources of growth we transform the Cobb–Douglas production function into rates of growth form.

Estimating Sources Of Growth

Growth accounting gives a deconstruction of economic growth into different components, which are related to changes in input factors and the residual reflecting technological progress and other factors. The importance of growth-accounting can be seen much more when the fundamental determinants – those crucial for economic growth – are not strongly dependent on those that involve technological progress. This may not generally be the case. In other words, growth-accounting exercise could be seen as a good step for carrying out analysis on the fundamental determinants of economic growth, which are linked to different factors contributing to growth, technological change and public policies. While we are looking at public policies, the presentation here focuses on primal and dual approaches to growth-accounting and the econometric approach. That is, we are using both the parametric and non-parametric methods.

Since equations (2) and (3) are static, showing that the quantity of output depends on inputs in a specific period of time t , we derive a dynamic version that describes output as changing over time. That is, the growth rate can be disaggregated into different components related to technological progress and factor accumulation. We differentiate equation 2 with respect to time and divide by Y , which gives the following equation after rearrangement of terms. As we differentiate with respect to time, for simplicity, we omit the time factor in our results. Thus:

$$\dot{Y}/Y = a + (F_K K/Y) \dot{K}/K + (F_L L/Y) \dot{L}/L \quad (4)$$

Hence, the term 'a' in equation (4) can be interpreted as the growth rate of TFP. This implies that equation (4) can be written as:

$$\left(\begin{array}{c} \text{growth rate} \\ \text{of GDP} \end{array} \right) = \varepsilon_K \times \left(\begin{array}{c} \text{growth rate} \\ \text{of capital} \end{array} \right) + \varepsilon_L \times \left(\begin{array}{c} \text{growth rate} \\ \text{of labour} \end{array} \right) + \left(\begin{array}{c} \text{growth rate} \\ \text{of TFP} \end{array} \right),$$

Where ε_K and ε_L stand for the elasticity of output with respect to capital and labour, respectively.

Since the data on GDP, capital, and labour are available in the Cameroon's national accounts data, TFP growth rates are obtained by subtracting from GDP growth the sum of the growth rates of capital and labour with appropriate weights ε_K and ε_L . The problem, obviously, is that ε_K and ε_L are unknown parameters depending on the functional form of $F(K, L)$, and it is these parameters that are critical in calculating TFP growth.

Thus, we can rewrite the above relation as:

$$G_Y = G_A + E_{Y,K} G_K + E_{Y,L} G_L \quad (4.1)$$

with F_K, F_L being the marginal product of the respective inputs and a or G_A the growth rate of TFP.

If the technological factor is Hicks-neutral in production, we have $F(A, K, L) = A \cdot F(K, L)$

then $a = \dot{A} / A = G_A$. These two equations are in growth rates. Note: $\varepsilon_L = E_{Y,L}$ $\varepsilon_K = E_{Y,K}$.

Parametric Approach

Empirically we can carry on an econometric estimation on equation (4 or 4.1) using time series data by regressing $\dot{Y} / Y$ on $\dot{K} / K$ and $\dot{L} / L$ and the constant or intercept reflecting the total factor productivity (TFP). The coefficients are the factors growth rates measuring $F_K K / Y$ and $F_L L / Y$, which are output elasticities with respect to respective inputs. One good thing about this approach is that we do not have to assume that marginal products are reflected by their respective real factor prices (i.e. $F_K = R/P$; $F_L = W/P$), with R the price of capital, W the price of labour and P the general price level. On the other hand, there are some econometric problems involved in using this approach.

First $\dot{K} / K$ and $\dot{L} / L$ are not really exogenous with respect to changes in TFP; 'the factor growth rates could receive credit for correlated variation, in observable technological changes' (Barro 1998:5). Technological changes may be reflected in the factor growth rates, except we are able to break these factor inputs into quantity and quality components. Secondly, measuring $\dot{K} / K$ and $\dot{L} / L$ with error would produce inconsistent estimates of the coefficients of the variables (estimates of $F_K K / Y$ and $F_L L / Y$ would be inconsistent). And within this approach, the extension to allow for time variations in TFP growth rate and factor shares may pose problems. However, we still prefer this approach, partly to cross-check the results of non-parametric estimates. Hence in the non-parametric approach we use both the primal and dual approaches.

Non-parametric Primal Approach

From equation (4.1) we can calculate total factor productivity (TFP) as residual:

$$\begin{aligned} a &= G_A = G_Y - E_{YK} G_K - E_{YL} G_L \\ &= \dot{Y}/Y - (F_K/Y) \dot{K}/K - (F_L/Y) \dot{L}/L \end{aligned} \quad (5)$$

The problem with this equation is that we cannot observe F_K and F_L – the marginal products of the factor inputs. For practical purposes, we assume that the marginal products reflect the observed input prices; we then use the factor prices. And if factor inputs receive (or are paid) their marginal products we have the real wage rate (W/P) equal to labour marginal product, and the real rental price (R/P) of capital equal to its marginal product. The primal estimate of TFP growth is then

$$a = \dot{Y}/Y - S_K \dot{K}/K - S_L \dot{L}/L \quad (6)$$

as in equation (5), where $S_K = (RK)/Y$ and $S_L = (WL)/Y$ being the shares of respective factor inputs in the total output. This is the primal means of measuring the TFP.

Non-parametric Dual Approach

We obtain the dual by equating factor incomes to the output:

$$Y = RK + WL \quad (7)$$

We differentiate this equation with respect to time, divide by Y and rearrange terms with the following result:

$$\dot{Y}/Y = S_K(\dot{R}/R + \dot{K}/K) + S_L(\dot{W}/W + \dot{L}/L) \quad (8)$$

S_K and S_L are the respective factor shares. Taking the factor quantity term to the left side of the equation and noting the Solow's residual (TFP) as given in equation (8), we write the Solow's residual as

$$a = \dot{Y}/Y - S_K - S_L \dot{L}/L = S_K \dot{R}/R + S_L \dot{W}/W \quad (9)$$

This shows that Solow's residual is equal to the primal ($\dot{Y}/Y$) minus the share-weighted growth in factor quantities), which is equal to the dual (share-weighted growth of factor prices). The dual and primal use the factor –income shares (S_L, S_K); the dual involves changes in the factor prices while the primal uses the changes in the factor quantities. On the dual side, for any given factor quality, factor price increases can be maintained and sustained only when output rises for given input. So the average of growth rate of factor prices measures the extent of Solow's residual growth rate. It is important to note that the estimated dual equation is derived from only one condition – total output is equal to the factor incomes, with no assumptions established either between the relation between factor prices and marginal product or about the production function. The primal equals the dual, if $Y = RK + WL$ holds, and the estimates of TFP from the two approaches would give

the same value. In general growth-accounting is based on an important assumption: factor prices are equal to their respective marginal product. A violation of this assumption means that the calculation of a or G_A either from primal or dual would deviate from the true Solow's residual.

Sector Analysis

We also attempt to examine the main economic sectors, namely primary, secondary and tertiary. An examination of the sources of growth of these sectors underscores the importance of each in the performance of the overall economy. Traditionally these sectors have been represented by agriculture, industry/manufacturing and the service sectors respectively. In the Cameroon's national accounts agriculture is classified as the primary sector, which includes livestock, hunting, fishing, forestry and logging and crops. They are subdivided into sub-sectors. For instance, the crop sub-sector includes crops produced mainly for exports and those produced mainly for domestic consumption. This sector is dominated by smallholder production. The period 1960–76 witnessed a strong agricultural sector with great potentials in raw materials and modest production techniques. Agriculture is a national priority. Yet it is greatly in need of modernization and increased productivity. Major productive units still remain in the traditional sector, with very low yields partly because of low level of production techniques and basic equipment.

In a developing economy like Cameroon agriculture has generally been considered to be the most important sector, which provides and generates crucial interlinkages with the growth of other sectors and the whole economy such that the growth of other sectors may depend on the primary sector. The major feature of agriculture is its dependence on natural resources, with land productivity being very important. This could be reflected in also labour productivity and technological system, for instance, biochemical and mechanical technology are used in agriculture to increase productivity. Agriculture is dominant in terms of labour and potential high growth rate, which may start with modernization and transformation. This underscores the relationship with industry and other sectors.

The secondary sector also consists of the extractive industries (including mining and quarrying, transformation of raw materials, food industries, textiles and leather industries, woodland and wood products, chemical and chemical products, electricity, gas and oil refinery, public works and construction). Today about thirty large enterprises dominate this sector, with a few medium-sized enterprise and many small enterprises employing fewer than ten persons. The major industrial concerns include Alucam (aluminium production), Cimencam (cement manufacturing), and Cicam (textile and clothing manufacturing). This sector supposed to produce much value-added output especially from the primary sector and contribute greatly to the transformation of the economy. Initially the government created some institutions to contribute to promoting industrialization. There was provision of funds for small and medium-sized enterprises and the National Investment Corporation (SNI) became a big holding concern. Hence in the 1970s, and in the early 1980s, industrial and manufactured output rose

sharply. Today, however, industrial production is in a general state of decline. The beverage (particularly beer) industry is one of the few noticing an increase in production and sales. Part of the decline is related to high cost of inputs, ageing production plants and obsolete technology. This has very serious implications for production and competitiveness.

The tertiary sector covers trade, hotel and restaurants, tourism, transport and communication, financial activities, property and public administration. The service sector embraces a wide spectrum of economic transactions: transactions carried out in offices, outside the offices through beauty salons, insurance activities to international transactions. It is often difficult to measure the contribution of services to the economy because of their intangible nature. The public sector is a component of the service sector and initially absorbed much of the educational output. The tertiary sector therefore has tended to have a relatively very highly trained labour force, which may partly explain why its wage rate is relatively higher than in other sectors. The public sector, as part of the tertiary sector in Cameroon, has been involved in producing tangible goods, including private goods, as well as providing services. On the whole, the public sector has been regarded as hindering the proper performance of the economy.

In the broad sense, this sector provides or should provide facilitating activities. The activities of the sector facilitate the goods-producing activities of other sectors. Hence the technological impact on employment in services could be seen from this characteristic, although the interrelationship between facilitating goods-producing activities and other activities may vary. Cameroon's tertiary sector growth started before a sharp increase in manufacturing/industrialization. Yet local industrial expansion did not necessarily arise as a result of improved techniques in agricultural production, as agriculture has largely remained in the traditional sector.

Sector Labour Shift

Economic development has been said to be characterized by a shift from agriculture to manufacturing/industry, and then the expansion of the service sector especially in terms of employment and output. The service sector absorbs workers from the other sectors. Labour productivity (output/worker) tends to grow more slowly in the agriculture and service sectors than in the manufacturing/industrial sector. Increase of employment share in the secondary sector may mean movement of labour from agriculture to the manufacturing/industry sector. According to Engel's Law, as income grows people tend to spend relatively smaller proportion of their income on food (demand side effect). This means that as income rises people spend a smaller proportion of their income on food, and a greater proportion on manufactured goods and services. On the supply side, productivity growth in agriculture permits production of more food with fewer workers, resulting in the decline of employment in agriculture. So both the demand and supply sectors shift or should shift employment from agriculture to the manufacturing/industrial sector. This sector also releases workers into the service sector. Hence there is an integral link between the agriculture and other sectors.

Some Key Variables

Capital

There are many difficulties encountered in estimating capital stock, which stem from the unavailability of appropriate data set or information. Where possible we examine the different components of the capital stock as well as the aggregate capital stock. In using the capital stock, both at aggregate and sector level, we assume a proportional decay function of capital (or the asset). The capital in a year is reflected by the recursive condition:

$$K_t = (1 - d) K_{t-1} + Inv_t \quad (12)$$

where K_t is value of capital stock in year t and d is the rate of depreciation; and Inv_t is the level of investment in year t .

The classification could be done to isolate the quality element, or separating out firms and non-firms sector, domestic and imported goods, goods composition, non-residential and residential structures, equipment, or machines particularly in agriculture and manufacture. We use public investment as a proxy for service sector capital, and private investment as a proxy for manufacture sector capital, and use capital stock (from Nehru and Dharehwar 1993) for the aggregate economy.

Labour and Human Capital

A pool of human resources, which include labour, is a major source of economic growth in most developing countries. This can be discussed in terms of quantity and quality. Labour is heterogeneous with different levels of productivity. Yet only labour aggregates are considered in theoretical models, so that empirical study tends to aggregate heterogeneous labour. Increases in the quality of labour increase the human capital. Increasing the accumulation of human capital means increasing the skills and capabilities of workers. These skills and capabilities are acquired through schooling, experience and training, including improvements in health and nutrition. This accumulation of human capital tends to increase productivity growth.

Since the 1960s educational enrolment at primary, secondary and tertiary levels has sharply increased in Cameroon. This factor has led to a significant increase in the human capital of workers. But the recent downward trend and level of educational attainment in Cameroon could have long-run negative effects on the quality of the labour force and consequently on future growth. We could define labour input as the total hours worked in a period. The literature usually uses simple aggregators such as the sum of all workers or aggregate labour force. This may not reflect the quality of labour factoring in productivity differentials. However, it is quite simple and the data are easily available. We use labour employed (working population) as our labour input.

Embodied Technical Progress

In the discussion of factors (particularly labour and capital), the issue of embodied technical progress is important although it is quite difficult to capture empirically.

Capital

When capital at all ages is treated as in the equation above, technical change in capital investment then becomes a component of the residual factor in the growth equation. This is similar to the treatment of labour. Adjusting capital stock for embodied capital change makes the rate of growth more responsive to alterations in the capital accumulation rate. We do not know the rate of progress in order to comment on the effect of technical progress. However, there are some ways to adjust for these effects in both capital and labour: gross capital can be measured at current prices or adjusted for prices so that technical changes in capital are included in the price variable, with disembodied technical change as the residual factor. This approach tries to stress the relative importance of embodied technical progress. As a method of disembodied technical progress where an exponential time trend is added to the production function, the time trend represents a constant rate of productivity advance, and the residual includes the effects of embodied progress. One problem is that embodied technical progress can grow exponentially. Another is that not all technical progress is embodied.

The vintage approach allows for a more formal and accurate measure of the rate of embodied technical progress. A separate valuation is given to additional capital to capital stock each year – the weighting system assigns higher weights to more recent capital, assuming that it is more productive. One problem is assigning the weights: for example, how much of output growth is related to embodied technical change, how much to disembodied forces, and how much to change in the vintage distribution of capital as the vintage is changing. Knowing the rate of growth of total productivity and the vintage of capital, and all technical progress taken to be embodied, the changes in capital and the effects of vintage distribution change can be calculated.

Empirical

We estimate the parameters both at the aggregate level and at the sector level of the economy. Here are the results for the parametric approach.

Sources of Aggregate Output Growth

Econometric Estimates or Parametric Estimates

We regress output growth on the growth of the factor inputs for the economy as a whole. Here we limit ourselves to two factor inputs – labour and capital – with the following results:

$$\text{DLGDP} = .0601 + .6707 \text{ DLCAPGDP} + .3803 \text{ DLLABGDP}$$

(2.962) (3.016) (1.001)

$$R^2 = .4219; F(2, 33) = 4.6513; D W = 0.823; t\text{-values are in parentheses.}$$

DLGDP = growth of real GDP.

DLCAPGDP = growth of physical capital stock.

DLLABGDP = growth of labour employed in the economy.

The capital and constant coefficients have high t-values, and therefore are highly significant. The labour coefficient is not significant. Still the changes in the two inputs seem to explain the changes in the output (GDP). For the period 1961–96, the elasticity of output with respect to capital and labour is 0.6707 and 0.3803, respectively. That is, if labour were increased by 1 per cent, output would increase by 0.38 per cent. If we were to assume perfect competition, constant returns and factors of production receiving the value of their marginal products, then the elasticity with respect to each factor input represents the factor shares. But we do not need to do that, since the production is not constrained. Here the sum of the estimated coefficients is greater than one ($0.6707 + 0.3803 = 1.051$). This shows increasing return to scale with capital input playing a more significant role than labour in the economy. Yet technical progress is also important with the coefficient of 0.06.

Our results here are similar to those of Ghura (1997) in terms of showing increasing return to scale. But while Ghura used public and private investments for capital input we use the capital stock as the capital input. His addition of policy variables seemed not to affect the impact of private investment on growth. That is, his regression results indicate that private investment strongly increases growth. Our concern is mainly with factor inputs, which differ from those of Ghura. In other words, Ghura uses an endogenous growth model with policy variables playing a significant role in economic growth as expected. Here our growth-accounting method concerns factor inputs and policy variables become involved indirectly. That is, the policy variables can directly affect the factor inputs.

Sources of Agricultural Output Growth (Primary Sector)

For the primary sector agricultural output growth is regressed on three factor inputs – capital, labour and land. Results are as follows :

$$\text{DLAGR} = 0.050 + 0.794\text{DLCAPAGR} - 0.134\text{DLLABAGR} + 1.412\text{DLLAN}$$

(2.865) (6.583) (0.561) (1.671)

$R^2 = 0.598$; $F(3,32) = 15.910$; $DW = 1.31$; t- values are in parentheses.

DLAGR = growth of agricultural output.

DLCAPAGR = growth of agricultural capital stock.

DLLABAGR = growth of labour employed in the sector.

DLLAN = growth of agricultural land.

The constant and capital coefficients are significant. The land coefficient shows more than a one per cent increase in output with a one per cent increase in land, indicating the importance of land in the agriculture sector. The labour coefficient is not significant but negative, reflecting a negative impact on agriculture. The period 1961–96 shows the growth rate of agricultural output to be mostly influenced by factor inputs growth – particularly land and capital. The labour coefficient is negative, yet this sector shows increasing return to scale. Throughout the period, labour's contribution appeared to be much less than that of other factor inputs. This may be

due to poor data quality, which also shows up in large errors. Also the sector employs a very large proportion of labour relative to its share in GDP. The labour input in agriculture is relatively aged and generates declining productivity.

Sources of Growth in the Industrial (Secondary) Sector

With the secondary sector, industrial output growth is regressed on the growth of two factor inputs. The secondary sector here represents manufacturing/industrial sector. Results are as follows:

$$\text{DLIND} = 0.4652 + 0.683\text{DLLABIND} + 0.9481\text{DLCAPIND}$$

(2.5) (0.312) (7.763)

$R^2 = 0.646$; $F(2,33) = 30.2315$; $DW = 1.6$; t- values are in parentheses.

$R^2(\text{adj}) = 0.627$

DLIND = growth of industrial/manufacturing output.

DLLABIND = growth of labour employed in the sector.

DLCAPIND = growth of capital stock in the sector.

The constant coefficient is significant and the capital input coefficient is highly significant at the 5 per cent level. The labour input coefficient is not significant, yet it shows its contribution to growth. In this sector, capital input growth is seen as the major source of growth. The capital input growth was the highest in the period 1978–85 (the oil boom period).

Source of Growth in the Service (Tertiary) Sector

In the tertiary sector, output growth is regressed on the growth of two factor inputs – capital and labour. The tertiary sector includes the public sub-sector. Results are as follows :

$$\text{DLSER} = 0.0586 + 0.7075\text{DLCAPSER} + 0.5481 \text{DLLABSER}$$

(3.541) (5.926) (0.411)

$R^2 = .516$; $F(2,33) = 17.588$; $DW = 1.220$; t-values are in parentheses.

$R^2(\text{adj}) = 0.487$

DLSER = growth of output of the service (tertiary) sector.

DLCAPSER = growth of capital stock in the sector.

DLLABSER = growth of labour employed in the sector.

The coefficients of capital and constant are significant but the labour input is negative and not significant. This sector also employs much labour, but the proportion of output of this sector in the total output is not commensurate to the quantity of labour employed in the sector. Capital input contributes much more than labour input to the growth of the sector.

The Non-Parametric Estimates

We are the primal and dual for the total economy. Since one equals share of labour income plus share of capital income, we obtain the share of capital income by subtracting labour's income share from one.

Agriculture: Labour's share was greater than the capital's share for the period 1961–77, and it was again greater for the period 1985–93. The share of capital input shapely increased as from 1993.

Industry and services: In the industrial sector the share of capital in the sector's output has been much higher than that of labour. The situation is similar in the services sector.

Total factor productivity: Over the period, the total factor productivity (TFP) varies around zero and one for all the three sectors, with the means for the period being 0.0401 for agriculture, 0.0373 for industry and 0.0289 for services.

Economy: For the economy as a whole both the primal and the dual are calculated using the same shares of factor inputs. Prior to 1977, labour's share in GDP was greater than that of capital, but as from 1978 the share of capital surpasses that of labour. The primal and the dual results show the TFP moving together over the whole period. However, comparing the TFP from the primal (0.051), dual (0.045) and econometrics estimates (0.066), there are only slight differences as seen from their means. But the duality approach gives the same results.

We obtained estimates of the parameters for the three main sectors of the economy. On the whole, the coefficients of the input variables in each of the sector are greater than one. The estimated production functions therefore exhibit increasing returns to scale. On the aggregate production function of the economy, we further break down the series of data into different periods. This is to permit us to compare the country's results at different periods. The output growth rates are different, and factor contributions are also not the same. While the factor contributions are substantial in the economy, capital is more important than labour in the study. On the whole total factor productivity plays a much lesser role, as seen in Table 6.1.

Table 6.1 Factor and Total Factor Productivity Contribution to Economic Growth in Cameroon

	Aggregate GDP Growth Rate per annum	Contribution of Labour (L)	Percentage Contribution(L)	Contribution of Capital(K)	Percentage Contribution(K)	Contribution of Total Input (%)	Total Factor Productivity	Percentage Contribution
1961–91	3.3	0.879	26.6	2.345	71.1	97.4	0.845	2.6
1961–85	8.1	2.034	25.1	4.926	60.8	86	1.14	14.1
1970–79	8.6	2.946	34.3	3.873	4.5	79.2	1.81	21.0
1980–91	1.3	2.2087	169.9	–0.6793	–52.2	117.85	–0.238	–18.3
1987–93	–4.3	0.376	–8.7	–3.762	87.5	78.75	–0.914	21.25

Source: author's estimates.

Comparing the results at different periods brings out some important points. First, total factor productivity is still to play a significant role in economic growth in Cameroon, which could be generalized to include other African countries as other studies have shown. So with time and appropriate policies, one would expect TFP to play a much greater role in the economy. Second, the role of factor inputs and increasing return to scale is important. Third, the different inputs vary in their importance from period to period, depending on the accumulation and utilization of the factor inputs.

The Data

We use mainly secondary data in carrying out the estimates.

Data on Capital Input

Initially we used imported agricultural machines as agricultural capital, private investment as capital for the manufacturing/industrial sector, and total investment depreciated at 2.5 per cent as capital input for the tertiary sector. Our results improved when we based our estimates on the total capital stock (from Nehru and Dhareshwar 1993). We obtained the aggregate capital stock series and then disaggregate the series by share of each sector in the total GDP in the initial period. The initial ratios are as follows: for agriculture (0.30879), industry (0.24946) and tertiary (0.44174). From this calculation we have our sector capital stock series. It is surprising to see very high ratios up to 8.6 although it declines to 1.8, according to Ghura (1991) Cameroon in the period 1960–90 had a capital–GDP ratio of 1.5 higher than the value for Latin American countries. It seems as if Cameroon had a high savings rate up to 1976 and from then the savings rate declined, although the capital stock series continued to increase from then, but later on not as much as the GDP. Some authors have noted that low capital–output ratios around one are characterized by low-savings countries, while high-savings countries have about capital–output ratios around three. The meaning of the value of these ratios, however, depends on how the country accumulates and uses its capital for productive purposes. The way the capital stock is maintained is also important. This is because a country with a high capital–output ratio may not necessary generate the appropriate growth if the capital is not properly utilized and maintained.

Sources of Data

The data set includes macro and micro data because the study involves aggregate as well as sector data for the main economic sectors. We collected data for the period 1961–95 from various sources; but our major source is the Cameroon public sector, which is the main provider of data on the economy. Other secondary data sources are international publications (by the World Bank, IMF, UNESCO, World Resource Institute (WRI), FAO, ILO, African Development Bank (ADB) and African Central Bank (BEAC)). Another source is the National Census, surveys and the various studies on Cameroon's economy and relevant studies such as that of Nehru

and Dhareshwar (1993). Because of various data sources and the unreliability of Cameroon's data system it must be noted that the reliability, availability and comparability of data are affected by many factors – hence the putting together of the relevant and appropriate data for our study involved some judgement and creativity. Data needed should be in real terms. So in certain cases we use the consumer price index in the absence of consistent deflators. Of equal importance is the collecting of data from studies. In certain cases, to have a complete series, the data had to be pieced together from different sources.

Conclusion

In general, changes of factor inputs (labour and capital) are the principal sources of growth in the Cameroonian economy. Capital input seems to have been more important than labour input in terms of contribution to economic growth, as the econometric and the growth accounting results show. This is seen particularly during the oil boom period (1978-85), although labour input appears to be important particularly in the agricultural sector before the oil boom. At sector level, capital again seems to be quite important. In the agricultural sector land tends to be crucial, but this may only show the neglect of the labour input, which could greatly contribute to output growth if given the proper training and technology or equipment.

In general, similar studies (Dike 1995; Onjala 1996) have shown labour's contribution to be more than that of capital input. It seems as if this depends on the period; in our study we found that in some periods labour's contribution is greater than that of capital but more often capital dominates despite the abundance of labour. In developed economies, studies have shown that total factor productivity growth has been more important than in developing economies. Our study shows the importance of factor input (especially of capital) to be greater than total factor productivity. Although the importance of capital is highlighted, the role of labour is equally significant. Of equal importance is the knowledge that the 'residual' (TFP) is yet to play a greater role in output growth in these African economies. More effort must then be put in developing this component of growth in Cameroon's economy. That is, besides improving production methods, ways should be found to improve TFP. In periods when the economy has saved much or has grown more rapidly, it tended to invest much more in physical capital than in appropriate human capital. Yet there should be a balance between investment in human and physical capital, with greater stress put on human capital development as the main mover of other types of investment including investment in technology.

References

- Amin, Aloysius Ajab, 1998, *Cameroon's Fiscal Policy and Economic Growth*, AERC Research Paper No. 85, Nairobi: AERC.
- Amin, Aloysius Ajab, 2002, *An Examination of the Sources of Economic Growth in Cameroon*, AERC Research Paper No. 116, Nairobi: AERC.

- Arndt, H.W., 1992, *Essays on Development in a Liberal Economic Order*, Occasional Papers No. 35, San Francisco: ICEG/ICS Press.
- Barro, Robert, 1994, *Economic Growth and Convergence*, Occasional Papers No. 46, San Francisco: ICEG/ICS Press.
- Barro, Robert, 1998, *Notes on Growth Accounting*, Working Paper 6654, NBER Working Paper Series.
- Barro Robert and Xavier Sala-i-Martin, 1994, *Economic Growth*, New York: McGraw- Hill.
- Beaulieu. Eugene, 1990, *Structural Change in Kenya 1967–86*, Technical Paper 90-09, Long Range Planning Unit, Nairobi: Ministry of Planning and National Development.
- Blomstrom, Magnus and Edward N. Wolff, 1994, *Growth in A Dual Economy*, Discussion Paper No. 861, London: Centre for Economic Policy Research (CEPR).
- Bruton, H., 1967, 'Productivity Growth in Latin America', *American Economic Review*, Vol. 57, No. 5, pp. 1099–1116.
- Cameroon, Republic of, 1989, *Statement of Development Strategy and Economic Recovery*, Yaoundé.
- Cameroon, Republic of, 1961–86, *Five-Year Economic, Social and Cultural Development Plans*, Yaoundé.
- Denison, Edward, 1962, *Sources of Economic Growth in the United States and the Alternatives Before Us*, Supplementary Paper, Committee for Economic Development, Washington, DC.
- Denison, Edward, 1967, *Why Growth Rates Differ*, Washington, DC: Brookings Institution.
- Dike, Enwere, 1995, 'Sources of Long-run Economic Growth in Nigeria: A Study in Growth Accounting', *African Development Review*, Vol. 7, No. 1, pp. 76–87.
- Doeringer, Peter and Paul Streeten, 1990, 'How Economic Institutions Affect Economic Performance in Industrialised Countries: Lessons for Development', *World Development*, Vol. 18, No. 9, pp. 1249–53.
- Easterly, William, 1994, 'Economic Stagnation, Fixed Factors and Policy Thresholds', *Journal of Monetary Economics*, Vol. 33, pp. 525–57.
- Easterly, William and Ross Levine, 1999, 'It's Not Factor Accumulation: Stylized Facts and Growth Models', mimeo, World Bank.
- Easterly, William, Robert King and Ross Levine, 1994, 'Policy, Technology Adoption and Growth'. In: Luigi Pasinatti and Robert Solow, eds, *Economic Growth and the Structure of Long-term Development*, New York: St Martin's Press/International Economic Association.
- Easterly, William et al., 1994, *Policy, Technology Adoption and Growth*, Discussion Paper Series No. 957, London: CEPR.
- Elias, Victor J., 1992, *Source of Growth: A Study of Seven Latin American Economies*, San Francisco: ICS Press.
- Fagerberg, Jan, 1994, 'Technology and International Differences in Growth Rates', *Journal of Economic Literature*, Vol. 13, pp 1147–75.
- Fischer, Stanley, 1993, 'The Role of Macroeconomic Factors in Growth', *Journal of Monetary Economics*, Vol. 32, pp. 485–512.
- Galor, Oded and Daniel Tsiddon, 1994, *Human Capital Distribution, Technological Progress and Economic Growth*, Discussion Paper No. 971, London: CEPR.

- Galor, Oded and Daniel Tsiddon, 1996, *Technological Progress, Mobility and Economic Growth*, Discussion Paper No. 1413, London: CEPR.
- Ghura, Dhaneshwar, 1997, 'Private Investment and Endogenous Growth: Evidence from Cameroon', IMF Working Paper, Washington, DC: IMF.
- Harberger, Arnold, 1998, 'A Vision of the Growth Process', *American Economic Review*, Vol. 88, No. 1, pp. 1–32.
- Hayami, Yujuro, 1997, *Development Economics: From the Poverty to the Wealth of Nations*, Oxford: Clarendon Press.
- Khan, Mohsin S. and Delano Villanueva, 1991, *Macroeconomic Policies and Long-term Growth*, Special Paper No. 13, Nairobi: AERC.
- Lau, Lawrence and Lawrence R. Klein, 1990, *Models of Development*, San Francisco: ICEG/ICS Press.
- Lindenberg, Mare M., 1993, *The Human Development Race*, San Francisco: ICEG/ICS Press.
- Little, I.M.D. et al., 1995, *Boom, Crisis and Adjustment: The Macroeconomic Experience of Developing Countries*, Oxford: Oxford University Press.
- Lucas, Robert E., 1988, 'On the Mechanics of Economic Development', *Journal of Monetary Economics*, Vol. 22, No. 1, pp. 3–42.
- Madison, M., 1970, *Economic Progress and Policy in Developing Countries*, London: Allen & Unwin.
- Martin, Will and Devashish Mitra, 1998, *Productivity Growth and Convergence in Agriculture and Manufacture*, World Bank and Florida International University.
- Mulligan, Casey B. and Xavier Sala-i-Martin, 1995, *Measuring Aggregate Human Capital*, Discussion Paper Series No. 1149, London: CEPR.
- Nehru, Vikram and Ashok Dhareshwar, 1993, 'A New Database on Physical Capital Stock Sources: Methodology and Results', *Rivista de Analists Economico*, Vol. 8, No. 1, pp. 37–59.
- Nelson, Richard R. and Gavin Wright, 1992, 'The Rise and Fall of American Technological Leadership', *Journal of Economic Literature*, Vol. 30, No. 4, pp. 1931–64.
- Nicholson, Walter, 1978, *Microeconomic Theory*, Hinsdale, IL: The Dryden Press.
- Ohkawa, Kazushi, 1993, *Growth Mechanism of Developing Economies*, San Francisco: ICEG/ICS Press.
- Onjala, Joseph O., 1996, 'Investigation Sources of Economic Growth in Kenya: A Growth Accounting Approach', work in progress, Nairobi: AERC.
- Ouattara, Mama and Meleu Matthew, 1993, *Endogenous Growth and Structural Adjustment Policy in Côte d'Ivoire*, Final Report, Nairobi: AERC.
- Pscharopoulos, George, 1991, *The Economic Impact of Education Lessons for Policy Makers*, San Francisco: ICEG/ICS Press.
- Robinson, Peter B. and Somsak Tambunlertchai, 1993, *Africa and Asia: Can High Rates of Economic Growth Be Replicated?*, Occasional Papers No. 40, San Francisco: ICEG/ICS Press.
- Rowthorn, Robert and Ramana Ramaswamy, 1997, 'Deindustrialization – Its Causes and Implications', *Economic Issues*, No. 10, Washington, DC: IMF.
- Shaaeldin, Elfatih, 1989, 'Sources of Industrial Growth in Kenya, Tanzania and Zimbabwe: Some Estimates', *African Development Review*, No. 1, June.
- Solow, Robert, 1957, 'Technical Change and the Aggregate Production Function', *Review of Economic Statistics*, Vol. 39, No. 3, pp. 313–20.

- Streeten, Paul, 1989, *Mobilizing Human Potential: The Challenge of Unemployment*, New York: UNDP, United Nations Publications.
- Subramamian, Shakar, 1994, *The Oil Boom and After: Structural Adjustment in Cameroon*, World Paper No. 67, Cornell: Cornell Food and Nutrition Policy Program.
- Thirlwall, A.P., 1994, *Growth and Development with Special Reference to Developing Economies*. London: Macmillan.
- Williamson, Jeffrey G., 1991, 'Productivity and American Leadership: A Review Article', *Journal of Economic Literature*, Vol. 29, No. 1, pp. 51–68.
- World Bank, 1981, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*, Washington, DC: World Bank.
- World Bank, 1989, *Sub-Saharan Africa: From Crisis to Sustainable Growth – A Long Term Perspective Study*, Washington, DC: World Bank.
- World Bank, 1991, *The World Development Report*, Oxford: OUP and Washington, DC: World Bank.
- World Bank, 1995a, *Cameroon: Diversity, Growth and Poverty Reduction: Participatory Poverty Reduction*, Washington, DC: World Bank.
- World Bank, 1995b, *Labour and the Growth Crisis in Sub-Saharan Africa*, Washington, DC: World Bank.

The Effects of Trade Reform on Cameroon's Manufacturing Industries

Ousmanou Njikam

Introduction

Owing to the widely accepted view that liberal, outward-oriented trade policies are superior to restrictive, inward-oriented policies, and because of the slow or even negative growth of the 1980s, Cameroon broke from its tradition of inward-looking development strategies to embark upon a trade reform programme in July 1988. In this context, the protection of the import-competing industrial sector is reduced by drastically scaling down licensing requirements, removing progressively reference prices, and reducing tariff rates on most products (Table 7.1). The initial impact of these changes on import-competing products is softened by a 50 per cent nominal devaluation of the local currency (CFA francs) in January 1994.¹

The first four columns in Table 7.1 indicate that by 1994/95 Cameroon had reduced tariffs to uniformly low levels, and had considerably reduced the level of protection for most sectors. The last six columns indicate that these measures were accompanied by increases in import penetration rates, export shares and intra-industry trade index in all but two sectors (rubber products, and transport and others). It is generally believed that this increase in foreign competition would make Cameroonian industry more efficient in the production process. In attempting to evaluate the evidence that supports this view, this study aims to assess the impact of changes in Cameroon's trade regime on productive efficiency, that is, by quantifying and comparing the pre- (1988/89–1991/92) and post- (1992/93–1996/97) trade reform periods in the *Union Douanière et Economique de l'Afrique Centrale* (UDEAC)² firm-specific measure of productive efficiency (input elasticity, returns to scale, technical change and technical efficiency).

Table 7.1 Protection of Cameroonian Manufacturing Industries

Industry	Official Tariff Rates (%) ^a		Effective Protection Rates (%)		Import Penetration Rates (%) ^b		Export Shares (%) ^c		Intra-industry Trade Index (%) ^d	
Column key: (1) = 1985/86; (2) = 1994/95										
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Food Products	90.00	36.80	78258.	53.60	13.07	18.87	17.15	18.71	84.14	99.47
Beverage/Tobacco	163.00	36.80	555.50	57.70	19.37	29.46	2.98	5.60	22.65	24.94
Textile & Leather	95.00	19.30	1209.7	53.200	34.38	23.84	73.57	71.11	31.68	31.20
Wood & Furniture	64.00	19.30	591.90	-2.60	07.58	02.23	15.05	25.94	03.80	12.46
Paper & Printing	57.00	19.30	329.20	50.30	65.87	43.87	01.48	22.90	05.40	55.07
Chemical Products	58.00	26.80	1322.3	74.100	29.77	34.44	24.64	38.52	87.08	91.21
Rubber Products	102.00	26.80	4911.6	51.000	16.20	12.93	52.17	78.16	30.12	07.97
Building Materials	98.50	16.80	16367.	48.900	42.82	42.49	56.84	56.48	72.49	72.55
Electrical Products	49.00	19.30	706.40	20.60	37.26	32.52	21.29	36.50	62.58	91.20
Transport Material	73.00	16.80	717.60	38.70	29.32	30.71	18.10	46.68	69.51	67.23

Source: author's calculations.

Notes

^a Expressed as ad valorem rates.

^{b,c,d} Let X, M and Q represent exports, imports and domestic production, respectively. Then the export share is X/Q ; the import penetration rate is $M/(Q + M - X)$, and the index of intra-industry trade is $1 - |X - M| / (X + M)$. Effective protection figures are taken from PDI (1989) and Kamgnia (1994). The exports and imports are deflated by the export and import price indexes in the manufacturing sector, while the GDP deflator in the Cameroonian manufacturing sector deflates the outputs. All these deflators are taken from the World Bank World Tables, 1995.

It is argued that productivity might respond slowly to trade reform (Rodrick 1992). In this connection, and in order to clarify the effects of trade reform, other variables not directly related to trade reform are used to explain productive efficiency changes.

This chapter is structured as follows. After presentation of the relationship between trade reform and firm productive efficiency, the next section examines trade policy reform in Cameroon; this is followed by a literature review and methodology. The next section describes the structure of the manufacturing sector before and after trade reform, and the performance of the manufacturing industries in a context of trade reform. Then the data are described and the empirical results are analysed, and finally the conclusion and policy implications of the study are presented.

Trade Reform and Firm Productive Efficiency

Most observers believe strongly that trade reform is beneficial. The channels through which trade liberalization could bring benefits are broadly these: improved resource allocation; access to better technologies, inputs and intermediate goods; an economy better able to take advantage of economies of scale and scope; greater domestic competition; availability of favourable growth externalities including the transfer of

know-how; and a shake-up of industry that may create a Shumpeterian environment especially conducive to growth.³

Greater attention has therefore been given to the role of market mechanism in guiding the allocation of resources, and providing incentives for cost discipline and efficiency improvement. Indeed, increased competition or import discipline is important in moving producers from inefficient positions toward potential efficiency since an open economy is more likely to allocate resources in areas of comparative advantage. A different trade reform argument has to do with the effects of foreign competition on the efficiency of domestic producers. It is possible that the challenge implied by foreign trade forces domestic industries to respond by adopting new technologies to improve efficiency. This process is generally achieved through increased investments embodying new technology, and the increased acquisition of skills. Free trade also leads to a more economically rational market structure. Gains from liberalization also result from scale economies and economies of scope that arise in wider markets.⁴ Nishimizu and Page (1991:253) summarize this logic as follows :

The existence of economic of scale ... implies that a widening of a market through trade should lead to reduction in real production costs. In the context of an outward oriented development strategy, this argument is usually cast in terms of benefits of increased demand through export expansion ...

Last but not least, arguments similar to those on the efficacy of international competition also apply to national competition. Ultimately, it is the force of competition – whether external or internal – that challenges firms and induces the response of technical change, innovation and sustained effort to increase productive efficiency and reduce costs. It is often the case that this challenge/response mechanism is largely absent in economies in which non-market allocation of resources dominates in the form of planning or market regulation.

Trade Policy Reform In Cameroon

Since July 1988, the Cameroonian government has been pursuing trade measures within the framework of the structural adjustment programme (SAP). There is no general understanding on what is meant by trade policy reform. For Papageorgiou et al. (1991:13, 29), 'trade liberalization is defined as any act that would make the trade regime more neutral-nearer to a trade system free of government'. An episode of liberalization commences '... at a point at which a significant policy change toward liberalization was implemented. It ends with a reversal or when no further policy trend in either direction is apparent.' However, trade liberalization measures have a number of common features. They generally involved neutralizing incentives for exports and imports at low tariff levels through, (i) removal of import quotas and other quantitative restrictions (QRs) or their conversion into tariffs; (ii) removal or reduction of export taxes; (iii) subsequent reduction of the level and the dispersion of import tariff rates; and (iv) compensatory devaluation of the local currency.

Concerning the relative relaxation of QRs on imports and exports, in 1989/90, for instance, approximately 105 commodities did not require import licences, and so were banned from QRs. In 1990/91, 22 products were classified in the free import category. By 1991/92, nearly all QRs had been removed. For exports, exit duties on all commodities except coffee, cocoa and cotton were removed. In sum, and within the SAP there was simplification of the process of obtaining import as well as export licences and authorizations, and the elimination of the twinning system. On the other hand, the labour market had been deregulated in order to allow firms more flexibility in responding to the changing environment. However, despite these measures the Cameroonian economy is far from being open, and this liberalization episode can be characterized as more institutional. Further liberalization took place in 1992/93 within a regional framework, the Regional Fiscal Reform Programme in the UDEAC zone.

Prior to the trade reform, there were four individual taxes on imports: the custom duty (CD), the imports turnover tax (IMTOT), the entry fiscal duty (EFD) and the complementary tax (CT). The custom duty is levied on the cost insurance fret (CIF) value of the imported goods for local use, and was subject to a wide variation (5–20 per cent) both across and within sectors. The import turnover tax is levied at 10 per cent of the CIF value inclusive of custom duty, entry fiscal duty and the complementary tax; it could be zero for certain imported first-necessity goods, but sometimes reached 72 per cent of CIF value for some luxury imports. The entry fiscal duty is a tariff levied on the CIF value of imports whatever the country of origin at a rate between 15 and 70 per cent. The complementary tax is levied on the CI F value at the rate of 40 per cent. At the regional level, and on the export side, there were two main taxes: the production internal tax (PIT) and the unique tax (UT). Concerning the production internal tax, the fiscal regime consisted in granting partial or total fiscal and custom exemptions compensated by the collection of the specific PIT. The enterprises registered in the system of unique tax are exempted from all export taxes and duties in the UDEAC member states; these enterprises paid the unique tax.

After the trade liberalization, the custom duty and the entry fiscal duty were replaced by a custom duty, applicable to all Cameroonian imports, and according to the category of goods: first-necessity goods, 5 per cent; equipment goods, 10 per cent; intermediate goods, 20 per cent and current consumption goods, 30 per cent of the CIF value, respectively. The import turnover tax and the complementary tax were replaced by the turnover tax (TOT), applicable to all Cameroonian imports as well as to all domestic production at three different rates: zero rate for exempted goods, a reduced rate of 5 per cent and a normal rate of 12.5 per cent, respectively. On the export side, and at the regional level, the production internal tax was abolished while the unique tax was replaced by a generalized preferential tariff (GPT), which is a proportion of the custom duty applicable to similar goods that do not confirm to this particular tax system. The other different taxes remain unchanged, and their application depends on each UDEAC member state. In terms of Cameroon, the

contribution to Cameroonian shipper national councils (CSNC) and the computer redevalue (CR) is levied at the rates of 0.3 and 1.5 per cent, respectively. A tax on the control and the inspection of agricultural products (cocoa, coffee, wood, palm oil and bananas) is levied at the rate of 0.95 per cent% of the free on board (FOB) value of exports.

Finally, and considering the QRs, they were regarded before the trade reform as the principal instrument of domestic protection. In this context, an annual general trade programme (GTP) classified goods by tariff line into four categories: 'sensitive' goods, imported on very restrictive conditions; 'twinning' goods, which necessitated a prior authorization to import a quantity of a specific good in proportion to the local purchase; 'government-controlled' goods, which necessitated a prior authorization to be imported; and 'freely imported' goods. In 1992/93, 'sensitive' imported goods were steadily transferred to the category of 'government-controlled' goods. Nowadays, import licences for 'government-controlled' goods are almost automatically granted. However, imports of products that represent a danger for the environment, the life of human being and animals are still strictly forbidden. The period analysed in this chapter covers the above-mentioned two liberalization episodes.

Literature Review

The literature on economic efficiency change in developing countries offers a wide variety of possible causes. Recently a clear consensus has emerged on the role of trade policy in increasing growth and efficiency. However, until quite recently, much of what we know has been in terms of the macroeconomic effects of trade reforms.⁵

There is now a small but growing empirical literature on the effects of trade liberalization at a desegregated level. The hypothesis that opening up to international competition will induce increases in efficiency in domestic industries is generally supported by econometrics results. It is in this connection that the findings of Nishimizu and Robinson (1984) indicate important links between trade policies and industrial productivity performance. Pack (1993) has argued that the liberalization of the international trade regime is unlikely to be sufficient for successful development unless the technological ability of firms is increased to allow an elastic supply response. Using a panel of manufacturing firms in Côte d'Ivoire, Harrison (1994) has measured changing profit margins and productivity following the 1985 trade reform. Tybout and Westbrook (1995) found that Mexico's trade liberalization generated productivity gains; more specifically, they point out that average costs fell in most industries owing to improvement in relative productivity. Gokcekus (1997) found that total factor productivity growth in the Turkish rubber industry was significantly higher following trade liberalization, with technological change as the major contributor to this growth. Krishna and Mitra (1998) used firm-level data from India and found strong evidence of an increase in competition and in the growth rate of productivity. By accounting for imperfect competition and non-constant returns, Kim (2000) found that trade liberalization improved performance, increased competition and promoted scale efficiency in Korean manufacturing.

There are unresolved questions about the approach used by the preceding sources: they do not evaluate the range of manufacturing firms' productive efficiency change following the liberalization of the trade; moreover, most of these studies are oriented towards the analysis of the effects of trade reform on welfare and market structure as reflected in a price-marginal cost markup and scale efficiency. This chapter separates itself from the previous studies by assessing inputs and plant-specific measures of deviations from the production frontier, and the pre- and post-reform approach. Moreover, this study attempts to separate the effects of trade reform from the effects of macro determinants of industrial productive efficiency, such as institution and political or macroeconomic instability. Njikam (2003) uses a stochastic frontier production function approach to evaluate, and compare pre- and post-trade reform measures of productive efficiency in the UDEAC zone. This plant-level evidence confirmed the positive relationship between trade reform and productive efficiency even though the potential effects of trade reform on firm-specific efficiencies are ambiguous. However, Njikam's study is at the level of one industrial sub-sector (e.g. the electrical industry), and therefore ignores the effects of trade reforms on the whole manufacturing sector.

In recent years the use of frontier models is becoming increasingly widespread for a variety of reasons. First, the notion of a frontier is consistent with the underlying economic theory of optimizing behaviour. Second, deviations from a frontier have a natural interpretation as a measure of the efficiency with which production units pursue their behavioural objectives. Since the pioneer work of Farrell (1957), there have been several approaches in frontier production estimation, deterministic as well as stochastic. In the data envelopment analysis (DEA) approach no restrictive assumptions about technology have to be made, except about convexity. Although the main attraction of the DEA approach is the possibility of handling multiple input/multiple output technologies, its main shortcoming is that the efficiency of a micro unit is measured relative to the efficiency of all micro units. The stochastic frontier approach (SFA), also called the 'composed error' model of Aigner et al. (1977), and Meeusen and van den Broeck (1977), takes into account the possibility that a firm performance may be affected by factors entirely outside its control, such as poor machine performance, bad weather, input supply breakdowns, luck etc. as well as factors that are under its control (inefficiency). Hence, the asymmetric component of the error term permits random variation of the frontier across firms while a one-sided component captures the effects of inefficiency.

There are three categories of the SFA: the regular panel data model, with time-varying technical (in)efficiency; second, in an extension of the first, certain variables of plant and production characteristics are introduced, such as type of production process, fuel type, regions, locations etc. – the idea being to use these variables as controls instead of regular inputs; finally, in the third category, technical (in)efficiency is explained by variables other than the regular inputs – see Reifschneider and Rodney (1991). Given the purpose of our study, the first category is chosen here.

Methodology

Collier et al. (1997:349–50) offer an introduction to SFA methodology:

There are three ways of evaluating the impact of liberalization on economic performance: (1) CGE modeling, it has the virtue of allowing systematic evaluation of alternative scenarios; (2) cross-section analysis, it involves comparing the experience of countries that have undergone liberalization with those that have not and (3) time-series analysis; depending upon the availability of data this is potentially the most fruitful; this is essentially a 'before and after' methodology, that is, it tracks the series concerned up to liberalization and after liberalization. ...

The last approach is used in our analysis, and more specifically, the stochastic frontier production approach. To avoid strong a priori restrictions on the technology, a flexible functional form, namely translog (transcendental logarithmic), is adopted. As a form of benchmark model for technical change the standard time trend (STT) model is adopted (see Cofas 1997). If variables are in logarithmic form, the production technology of the Cameroonian manufacturing plants is represented by:

$$\ln y_{it} = \alpha_0 + \sum_{j=1}^6 \alpha_{jt} \ln x_{jit} + \alpha_{it} t + 1/2 \left\{ \sum_j \sum_k \beta_{jk} \ln x_{jit} \ln x_{kit} + \alpha_{it} t^2 \right\} + \sum_j \beta_{jt} \ln x_{jit} t - u + v \quad (1)$$

where y and x_j ($j = 1, \dots, n$) are the respective output and inputs measured in logarithms, α and β are unknown parameters, t is the time trend representing the rate of technical change or shift in the production function over time, u is a firm-specific technical efficiency variable that follows a half-normal distribution, and v is a disturbance term that follows a full normal distribution.

The elasticities of output with respect to inputs are calculated as follows:

$$\eta_j = \frac{\partial y}{\partial x_j} \cdot \frac{x_j}{y} = \frac{\partial \ln y}{\partial \ln x_j} = \alpha_j + \sum_k \beta_{jk} \ln x_{kit} + \beta_{jt} t \quad (2)$$

with $j = L_1, L_2, L_3, K, M$ and E , where L_1 stands for foreigners and senior executive, L_2 for middle executive, L_3 for workers and unskilled workers, K for capital, M for materials and E for energy. The input elasticities vary over time and across plants. Returns to scale (RTS), that is, the elasticity of scale are evaluated from the sum of the input elasticities $RTS = \sum \eta_j$ as, where η_j is defined as in equation (2). Technical change (TC) is specified as follows:

$$TC = \frac{\partial y}{\partial t} = \alpha_t + \alpha_{it} t + \sum_j \beta_{jt} \ln x_{jit} \quad (3)$$

In equation (3) TC consists of two parts: the pure TC component $\alpha_t + \alpha_{it} t$, which is invariant across plants, and the non-neutral component $\sum_j \beta_{jt} \ln x_{jit}$, which varies across plants and over time. Individual firm-specific measures of technical efficiency are more important from a policy viewpoint. Also, such desegregated measures facilitate straightforward comparison of firm-specific technical efficiencies over

time and across observations. Measurements of technical efficiency for individual observations are derived from the conditional distribution of u_i given ε_{it} as follows:

$$E(u_i / \varepsilon_{it}) = - \left[\sigma \frac{f\left(\frac{\varepsilon_{it} \lambda}{\sigma}\right)}{1 - F\left(\frac{\varepsilon_{it} \lambda}{\sigma}\right)} - \frac{\varepsilon_{it} \lambda}{\sigma} \right] \quad (4)$$

where $\sigma^2 = \sigma_u^2 \sigma_v^2 / T \sigma^2$, $\sigma^2 = \sigma_v^2 / T + \sigma_u^2$, $\lambda = \sigma_v^2 / T \sigma_u^2$ and $f(\cdot)$ and $F(\cdot)$ are density and distribution functions of $N(0,1)$, respectively. From equation (4), firm-specific technical efficiency $\exp(u)$ can be readily calculated.

Another important question is whether the pre-and post-trade reform approach used in this chapter really allows the assessment of the effects of trade policy on productive efficiency. This issue is explored by considering the role of institutions, political instability and macroeconomic instability as variables with (in)direct effects on an economy's performance and, consequently as potential determinants of productive efficiency.⁶

The institutions affect entrepreneurship and growth since institutions that lower transaction costs allow people to devote more time to productive pursuits, instead of protecting their interests from the rapacity of others. Among these institutions, property rights protection is perhaps the most important. Its role might be explored by using a comparative index of economic freedom calculated by Johnson and Sheehy (2000). This index captures the extent to which the legislation and the judiciary guarantee and protect property rights. Unfortunately, we cannot use this index in our analysis since it exists for Cameroon only from 1995. In terms of political instability, Barro argues (1996) that societies subject to a greater degree of political upheaval are more volatile, and tend to discourage investment in innovation and productivity enhancements. From 1990 to 1993, Cameroon suffered serious political instability with the operations '*villes mortes*', '*pieds morts*' and other widespread campaigns of non-violent pro-democracy protest, including significant labour strikes. During this period, almost all the activities at all levels of the economy were interrupted. Because this phenomenon is difficult to measure on an industry basis, a dummy-variable approach is employed. Finally, Fischer (1993) among others has argued that greater macroeconomic instability, and in particular higher inflation, tends to affect economic performance negatively.⁷ This issue is investigated here by introducing in the regression analysis the GDP deflator as an indicator of inflation. To test these propositions, we estimate the following model on pooled pre- and post-trade reform data:

$$\ln TE_{it} = \beta_0 + \beta_1 Dtrade + \beta_2 DPINS + \beta_3 MINS + \beta_{12} DDPINS + \beta_{13} DMINS + \varepsilon_{it} \quad (5)$$

where $\ln TE$ is the natural logarithm of firm-specific technical efficiencies.⁸ $Dtrade$ is the trade reform dummy taking 0 as before trade reform and 1 after. $DPINS$ is the dummy variable for political instability, taking 0 during the years of instability and 1 otherwise. $MINS$ represents macroeconomic instability. $DDPINS$ and $DMINS$

are the interacting variables between the trade reform dummy and the political and macroeconomic instability variables. ε_t is the residual term assumed to be iid.

Structure of the Cameroon Manufacturing Sector

From the national account classification, the Cameroon manufacturing sector consists of various sub-sectors. The 1985/86 (or before trade reform) industrial survey shows that the total manufacturing comprises a total of 484 firms. The share of each industrial sector is as follows: food, 37 firms (7.64 per cent); beverage and tobacco, 13 firms (2.69 per cent); textiles, 33 firms (6.82 per cent); wood and furniture, 68 firms (14.05 per cent); paper and printing, 24 firms (4.96 per cent); chemical, 16 firms (3.31 per cent); rubber and plastic, 15 firms (3.1 per cent); building materials, 7 firms (1.45 per cent); basic metallurgy, 3 firms (0.62 per cent); electrical products, 27 firms (5.58 per cent); and transport materials, 6 firms or 1.24 per cent. In terms of employment, the 1989/90 Industrial Master Plan (IMP) shows a total labour force of 69,618 for the whole manufacturing sector. The dominant industrial sector is food processing with nearly 21.93 per cent of the labour force, followed by beverage and tobacco, wood and furniture, and rubber and plastic products with a share of total manufacturing varying between 12 and 16.18 per cent. Other sub-sectors of the industrial sector have a share of total labour between 1.1 and 6.23 per cent. In terms of production, the most productive sectors are basic metallurgy, chemicals, electrical products, rubber and textiles, with a production representing, respectively, 6.31, 5.23, 2.9, 2.61 and 2.52 per cent of the total manufacturing production before the reform of the trade regime.

After the trade reform period, the structure of the manufacturing sector was as follows. The industrial annual survey (IAS) shows that in 1998/99, the manufacturing sector consisted of 180 firms. The share of each sector was as follows: food, 27 firms (15 per cent); beverage and tobacco, 10 firms (5.56 per cent); textiles, 7 firms (3.89 per cent); wood and furniture, 35 firms (19.4 per cent); paper and printing, 21 firms (11.67 per cent); chemicals, 19 firms (10.56 per cent); rubber and plastics, 11 firms (6.11 per cent); building materials, 5 firms (2.78 per cent); basic metallurgy, 3 firms (1.67 per cent); electrical products, 11 firms (6.11 per cent); and transport materials, 3 firms (1.67 per cent).

Relative to the pre-trade reform sample, the above statistics represent a dramatic drop of nearly 63 per cent of firms in the total manufacturing sector. Concerning industrial sectors, the trade reform was disastrous for four, namely, textiles, wood and furniture, electrical products, and transport materials, with a respective drop of the number of firms of nearly 78.79, 48.53, 59.26 and 50 per cent. Therefore, trade reform nearly led to the disappearance of these sectors. Five sectors (food, beverage and tobacco, rubber, paper and printing, and building materials) witnessed a drop in the number of firms of between 12.5 and 28.5 per cent. The chemicals industry by contrast witnessed an increase of 18.75 per cent in the number of firms.

In 1998/99, the total labour force of the whole manufacturing sector was 56,704 (Cameroon Statistics Yearbook). Relative to the pre-trade reform, this represents a

dramatic drop of the labour force of nearly 18.55 per cent. This situation, however, masks a disparate evolution among the different industrial sectors. Indeed, some sectors such as food, building materials, paper and printing, and rubber and plastic products, lost employment after the trade reform, while sectors such as wood and furniture, textiles, and chemical reinforced their labour force. The most productive sectors after the trade reform have been textiles, wood and furniture, chemical products and the electrical products industry.

Trade Reform and Cameroonian Manufacturing Industries

From its commencement in 1988 until the first major fiscal reform of 1993 and the devaluation of 1994 trade reform affected Cameroonian manufacturing industries in different ways. This section summarizes the ways in which industrial sectors' protection and trade flow variables (import penetration, export share and intra-industry trade index) changed in the period before and after trade policies reform.

Before trade reform, all Cameroonian industrial sub-sectors were typical import-substitution industries. Among the various measures of protection, the official tariff rates are of interest because policy-makers directly control them. Between 1985/86 and 1994/95 there were dramatic changes in the tariff rates of manufactures. By 1994/95, and for all manufacturing sectors, there had been a fall of nearly 54 to 83 per cent. The effective protection rates figures are also of interest since they summarize the product market forces that drive a wedge between domestic and world prices. By 1994/95 the dramatic drop in effective protection rates was situated between 84.72 and 100.44 per cent for all the sectors. The considerable cuts in protection levels led to dramatic changes in import penetration rates, export shares and intra-industry trade indexes.

The import penetration rates and export shares are also of interest because they reveal how important foreign producers and consumers are to domestic suppliers. The most striking changes in export/output ratios over the period are those of the paper and printing, transport materials, beverage and tobacco, wood and furniture and electrical products sectors.⁹ From the pre- to post-trade reform period, these ratios rose from 1.5 to 22.9 per cent for paper and printing, 18.1 to 46.68 per cent for transport materials, 2.98 to 5.6 per cent for beverage and tobacco, 15.05 to 25.94 per cent for wood and furniture, and from 21.29 to 36.5 per cent for the electrical products industry, respectively. Among the ten industrial sectors in the sample, only two (textile and leather, and building materials) registered declining export shares over this period; another two (chemical and rubber products) experienced nearly 50 per cent change while the food processing industry registered a slight increase of about 9.1 per cent of its export share. The norm thus appears to have been one of increasing openness. Some of these changes no doubt reflect recent efforts to liberalize the Cameroonian economy. As far as import penetration is concerned, the most striking changes from the pre- to post-reform period are related to food processing, beverage and tobacco, chemical products and transport materials. Over both periods, the import penetration rates increased from 13.1 to 18.87 per

cent, 19.37 to 29.46 per cent, 29.77 to 34.44 per cent and from 29.32 to 30.71 per cent for the food processing, beverage and tobacco, chemical products and transport materials industry, respectively. The other six remaining industries witnessed declining import penetration rates. In the Cameroonian trade reform context, therefore, both exports and imports were not encouraged to rise together in all industrial sub-sectors.

Also of interest is the degree of openness in the sense of intra-industry trade. From the pre- to post-trade reform period, intra-industry trade figures exhibited dramatic increases ranging from 45.73 to 919.81 per cent for electrical, wood and furniture, and paper and printing, respectively. Five other sub-sectors, namely, building materials, transport materials, chemical products, beverage and tobacco, and food industry registered mild increases ranging from 0.083 to 18.22 per cent in the intra-industry trade index. However, the textile and leather, and rubber products industry registered large decrease of 1.52 and 73.54 per cent, respectively.

To see whether the above various trade exposure measures tell a coherent story, we calculated the correlation between their levels and changes. These are reported in Table 7.2.

Several patterns are worth noting. Firstly, as theory would suggest, relatively large reductions in official tariffs are associated with relatively large increases in import penetration. In the Cameroonian manufacturing context, this correlation is statistically significant. The same pattern also extends to effective protection, and the correlation is also significant. Secondly, output expansion is associated. Thirdly, the results in Table 7.2 show a strong negative association between output growth and intra-industry trade index. with higher rates of export expansion, and relatively lower initial openness measured by the 1985/86 official tariffs, effective protection and import penetration rates.

Looking across sectors, changes in official tariffs are associated with changes in effective protection. However, this association is statistically weak. Fourthly, changes in tariffs and effective protection very closely correlate with sector-specific changes in import penetration and export rates. Indeed, large variations in effective protection rate are robustly correlated with variations in export shares. Finally, large changes in import penetration are associated with large reductions in initial import penetration rates.

Data Source and Definitions

The firm-level panel data for the present study are taken from the *Direction de la Statistique et de la Comptabilité National* (DSCN), which is instructed to gather annual information on all industrial firms. These data have been checked and supplemented using the *Regional Program on Enterprise Development in Africa*, RPED survey data.

Table 7.2 Cameroon: Cross-industry Rank Correlation Between Levels and Changes in Trade Exposure Measures

	GR	OTR	ERP	MPR	XS	ITI	DOTR	DERP	DXS	DMPR	DITI
GR	1										
OTR	-0.235 *	1									
ERP	-0.145	0.091	1								
MPR	-0.103	-0.334 *	-0.304 *	1							
XS	0.074	0.098	-0.054	-0.004	1						
ITI	-0.682 *	-0.173	0.468 **	-0.641 *	0.149	1					
DOTR	-0.034 0.564 *	-0.296 **	-0.039	-0.464 *	0.335 **	1					
DERP	-0.113	0.092	-0.387 *	0.634 *	-0.485 *	-0.382 *	0.031	1			
DXS	0.315 **	-0.302 *	-0.193	0.733 *	-0.451 *	-0.465 *	0.139	0.779 *	1		
DMPR	-0.774 *	0.541 *	0.477 **	-0.160	-0.235 *	0.581 *	0.135	0.129	-0.262	1	
DITI	0.451 **	-0.369 *	-0.164	0.652 *	-0.475 *	-0.542 *	0.176	0.673 *	0.962 *	-0.395	1

Source: author's calculations.

Key: GR = growth in industry-wide gross output; OTR = 1985/86 official tariff rates; ERP = 1985/86 effective rates of protection; MPR = 1985/86 import penetration rates; ITI = 1985/86 intra-industry trade index; XS = 1985/86 export shares; DOTR is change in official tariff rate between 1985/86 and 1994/95. DXS and DMPR are changes in export share and import penetration rate between 1985/86 and 1994/95 respectively. DERP is the change in effective protection between 1985/86 and 1994/95 while DITI is the variation in intra-industry trade index between 1985/86 and 1994/95.

* Significant at the 5% level; ** Significant at the 10% level.

Though the coverage of the industrial sector is incomplete (informal firms are excluded, and some industries, like building materials and transport and others consist of only four or five firms), the sample covers large, medium-size and small-size formal manufacturing firms over the period 1988/89 to 1996/97, inclusive. For each industrial sub-sector the sample firms represent approximately 75 per cent of total output. Therefore, in terms of size, the data set well represents the population. For each firm and year, we observe the usual data on production, labour, intermediate consumption/materials, investment, inventories and energy (water, electricity and fuel), as well as industry codes and plant identity codes that allow us to track establishments over time, and to get an idea on the exit and entry of firms in each sub-sector.

The variables are defined as follows: Output is the observed production per year, measured in volume; the deflator used is the industrial price index. Labour is the total number of permanent workers per year; it is in three categories according to the level of skill: L_1 is the total number of foreigners and engineers per year, L_2 is the total number of middle executives per year and L_3 is the total number of workers and unskilled workers per year. The capital variable is obtained from the balance sheet of the different plants, and covers machinery and equipment. Following Ahluwalia (1991) and Harrison (1994), the gross capital stock estimates at constant prices for this study are derived using the perpetual inventory method. This requires data on (i) the gross capital stock for a benchmark year and (ii) gross investment for all the years. Fortunately, data on gross investment at current price were available for each year and for each firm. Thus, the real capital stock in period t is defined as follows: $K_{it} = (1 - d) K_{i,t-1} + I_t$. As a benchmark we used 1985/86 capital stock for each firm and then added real investment while accounting for depreciation. Real investment is computed by deflating investment at current prices by the wholesale price index for machinery and machine tools. Raw material is not proportional to output, and is therefore included in the analysis; it is measured by volume, using the price index of raw materials in each industrial sub-sector as deflator. The total value in CFA francs of energy used per year is in constant prices (using the price index of each category of energy as deflator); it is an aggregate of the plant-level consumption of fuel, water and electricity.

The manufacturing sectors thus analysed are: food processing (19 firms), beverage and tobacco (13 firms), textile and leather (8 firms), wood and furniture (17 firms), paper and printing (15 firms), chemicals (17 firms) and rubber products (10 firms), giving a sample of 99 firms before trade reform. But during the post-reform period the sample fell to 86 firms since the competition against international producers because of trade regime reform usually leads to the exit of the less efficient firms. The manufacturing sector after trade reform then consisted of food processing (15 firms), beverage and tobacco (10 firms), textile and leather (8 firms), wood and furniture (14 firms), paper and printing (12 firms), chemicals (17 firms) and rubber products (10). However, using a single production frontier for all the firms would not be appropriate because the firms do not have the same inputs and do not produce the same outputs. This would lead to an underestimation of efficiency levels as a result of the heterogeneity between firms and sectors. Therefore, we estimate production frontiers by industrial sub-sector using the program incorporated in the LIMDEP software package. Two sets of panel data (in the sense that the same firms are observed for different periods) have been constructed: the pre-reform panel data (1988/89–1991/92), and the post-reform panel data, which covers the 1992/93–1996/97 period. A summary statistics of variables is presented in Appendix Table 7A.1.

Analysis of Empirical Results

To establish a link between the trade regime and industrial efficiency, we first quantify industry- and firm-specific efficiency measures. In this regard we consider estima-

tion of a stochastic frontier production function for each industrial sub-sector. The choice between the Cobb–Douglas and the translog functional form is made using the conventional F test, which compares the restricted and unrestricted residual sums of squares. The test results are significant at the 5 per cent significant level in all industrial sub-sectors except in paper and printing. This means that in these sub-sectors the translog form was best supported by the data while the Cobb–Douglas form was best supported by the data in paper and printing. However, given the problem of degree of freedom we were forced to use only the Cobb–Douglas form in the textile and leather industrial sub-sector. The maximum likelihood estimates (MLE) of equation (1) for each industrial sub-sector and over both sample periods are reported in Table 7A.1. Most of the estimates are significant at the 5 per cent level. During the pre-reform period, the most relevant estimate to the present study, that is, the variance ratio, γ , varies between 0.1348 and 0.999 for the seven industrial sub-sectors under study. These estimates are significant at the 1 per cent level. This means that at least 13.5 per cent and at most 99.9 per cent of the variation in output is due to technical efficiency rather than random factors. Over the post-reform period the values of the variance ratio are also significant and vary between 0.13 and 0.99, meaning that at least 13 per cent and at most 99 per cent of the gap between potential and actual outputs is due to technical (in)ability.

The pre- and post-reform MLE in Table 7A.2 unfortunately do not have any economic meaning. In this regard and using equation 2 the output elasticity with respect to foreigners and engineers (E_{fe}), middle executives (E_{me}), workers and unskilled workers (E_{ww}), capital (E_k), materials (E_m), and energy (E_e) inputs are derived from these estimates. The pre- and post-reform elasticities are presented in Table 7A.2. In terms of sign, the elasticities with respect to middle executives are surprising. Over both samples period, the output elasticity with respect to middle executives has a negative sign in four sub-sectors, namely, food, beverage and tobacco, textile and leather, and wood and furniture. This means that before and after trade reform it was impossible to increase the level of output by increasing the application of middle executives. In the Cameroonian context this might be partly owing to the phenomena of corruption, favouritism etc. in hiring administrative workers. And, still focusing on the output elasticity with respect to middle executives, it has a positive sign over both samples period for the three remaining industrial sub-sectors, the exception being in rubber products where the response of middle executives to trade reform was negative. However, and for both samples period, all the remaining output elasticities are positive, and show an improvement but at different levels. The exception is in the chemicals and rubber industries where the output elasticities with respect to capital and energy inputs are negative before and after trade reform.

In the chemical and rubber industries decreasing returns to scale prevailed over both samples period. Prior to trade reform, and in the beverage and tobacco and textile industries, returns were also decreasing. In the remaining industrial sub-sectors and over both samples period, the returns to scale (RTS) were far above one, suggesting that most of the Cameroonian manufacturing industries had been using a technology

with fairly large increasing returns to scale. Although increasing returns to scale are observed in both time periods, there are very large economies of scale after trade reform. Indeed, from the pre- to post-reform period, the RST increased by about 33.6, 50, 53.01, 59.74 and 136.9 per cent in the food, wood, textile, rubber, and beverage and tobacco industries. respectively. Using equation (3) we obtained the overall rate of TC and its components. The results are reported in Table 7.3.

Table 7.3: Pre (1)- and Post (2)- Trade Reform Technical Change, Pure Technical Change and Non-neutral Technical Change of Cameroonian Manufacturing Industries

Industry	Overall	TC	Pure	TC	Non-neutral	TC
	(1)	(2)	(1)	(2)	(1)	(2)
Food Products	0.345	0.233	0.325	0.220	0.002	-0.053
Beverage & Tobacco	0.144	0.763	0.141	0.705	0.05	-0.003
Textiles & Leather	0.102	-0.064	/	/	/	/
Wood & Furniture	0.192	0.222	0.258	0.216	-0.07	-0.021
Paper & Printing	0.025	-0.01	/	/	/	/
Chemical Products	-0.124	0.150	-0.118	0.150	-0.02	-0.04
Rubber & Plastic	0.090	-0.019	0.091	-0.02	-1.02	-0.004

Source: author's calculations.

In regard to the results in Table 7.3, the following observations can be made: (i) except in the textile and leather, paper and printing and rubber industries, where TC dropped drastically after the reform of the trade regime, there is an increasing trend in TC from the pre- to post-reform in other industrial sectors; (ii) when the results in Table 7.4 are compared with the figures in Table 7.1 above, the effects of trade liberalization on TC become clearer. In the food, beverage and tobacco, wood and furniture, and chemicals industrial sub-sectors, the range of increase in the measure of international competitiveness, that is, import penetration rates, exports share and intra-industry trade index from the pre- to post-reform period is dramatic. As a response to this increase in foreign competition, the post-trade reform TC in beverage and tobacco, wood and furniture, and chemical industrial sub-sectors was respectively 4.2839, 0.1574 and 2.205 times higher than the pre-trade reform TC. We therefore agree with other authors that increased imports and increased exports augmented international technical knowledge. The only result contrary to this view is in the food industry where the increase in foreign competition rather led to a dramatic drop of about 32.7 per cent in TC. In the industrial sub-sectors where the response of TC to trade reform was negative (textile, paper and printing, and rubber), the figures in Table 7.1 show that these industries were still purely import-substitution in nature. Among these import-substitution industries, and despite the slight increase in export share, import penetration rates and the intra-industry trade index decreased in many cases instead. (iii) Finally, and concerning the TC components, there is an increasing trend in pure TC component from the pre- to post-trade reform period. The high pure component of TC over both samples period is neutralized by the corresponding

very low non-neutral component of TC. This non-neutral component is fairly changing following trade reform.

By using equation (4) we estimate pre- and post-reform firm-specific technical efficiencies (see Table 7A.3). The summary statistics of these firm-specific technical capabilities are reported in Table 7.4. There were drops in mean technical efficiency from pre-trade reform level to post-trade reform level of 3.51, 8.97, 1.26, 9.86, 6.25 and 2.28 per cent, respectively, in food, beverage and tobacco, wood, paper and printing, chemicals, and total manufacturing. By contrast, in the textile and rubber sub-sectors, the mean technical efficiency showed an improvement of nearly 23.68 and 1.72 per cent, respectively. Because of this negative response to trade reform in most sub-sectors, it is necessary to test statistically the hypothesis that there was no difference between pre- and post-trade reform mean technical efficiency. For that the following test is used,

$$T = (MTE_2 - MTE_1) / (\sqrt{\sigma_1^2 / n_1 + \sigma_2^2 / n_2})$$

where MTE_1 and MTE_2 are pre- and post-trade reform mean technical efficiency, σ_1 and σ_2 are the standard deviations while n_1 and n_2 are pre- and post-trade reform sample size respectively. The calculated T values are 1.62, 3.75, 1.92, 0.12, 1.1, 2.9, 22.12 and 2.17, respectively, for food, beverage and tobacco, textile, wood, paper and printing, chemicals, rubber and total manufacturing.

At a 5 per cent significance level, the equality between post- and pre-trade reform mean technical efficiencies is rejected in beverage and tobacco, chemicals and total manufacturing. This means that in the years following trade reform, the mean technical efficiency was clearly smaller than the mean technical efficiency of the years before trade reform. In other sub-sectors, the drop in the mean technical efficiency following the drop after trade reform was not statistically significant. In the textile and rubber industries, however, the hypothesis of the equality between pre- and post-trade reform mean technical efficiency is rejected, meaning that the improvement in mean technical efficiency was significant. By applying a non-parametric test, the Kolmogorov–Smirnov test, a stronger hypothesis that not only the mean technical efficiency but the distribution of firms according to their pre- and post-trade reform technical efficiency is identical is explored. If $F_B(x)$ and $F_A(x)$ are the empirical cumulative frequency distributions of pre- and post-trade reform firm-specific technical efficiencies respectively, the statistic $D = |F_B(x) - F_A(x)|$ is equal to 0.28, and this value is well above the critical value of 0.124 at the 5 per cent level.¹⁰ So, and from the pre- to post-reform periods, differences in firm-specific technical efficiencies are statistically significant. Therefore, trade reform pushed the plants nearer the frontier of production.

As indicated by the coefficient of variation, the changes in firm-specific technical efficiencies are more pronounced during the pre-reform than the post-reform period. The value of the median at 84.14 per cent means that before trade reform 50 per cent of Cameroonian manufacturing firms had a technical efficiency of below 84.14 per cent and the other 50 per cent had a technical efficiency of above 84.14 per cent.

Table 7.4: Pre (1)- and Post (2)- trade Reform Summary Statistics of Firm-specific Technical Efficiencies (%)

Industry	Mean		Std Dev.		Coefficient Variation		Median		Minimum		Maximum	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Food Products	84.5 4	81.6 1	9.59 4	6.86 1	0.11 0.08	0.08 0.06	85.6 1	85.1 8	47.7 0	52.3 7	95.7 7	1.8 7
Beverage Tobacco	91.9 6	83.7 1	9.42 6	4.96 1	0.10 0.06	0.06 0.06	86.7 3	87.2 7	58.1 7	56.3 5	99.2 1	1.6 6
Textiles Leather	71.3 8	88.2 8	16.6 5	2.39 5	0.23 0.03	0.03 0.03	49.9 9	87.5 0	27.3 0	81.8 0	94.1 8	92.9 0
Wood Furniture	80.6 8	79.6 6	18.3 4	16.5 5	0.23 0.21	0.21 0.21	81.9 2	81.3 7	23.9 8	36.7 9	98.3 9	98.2 6
Paper Printing	74.6 4	67.2 8	13.8 4	14.5 3	0.19 0.22	0.22 0.22	75.8 1	41.5 5	51.0 2	37.2 4	99.9 0	97.0 6
Chemical	86.5 4	81.1 3	8.42 4	8.36 3	0.10 0.10	0.10 0.10	61.5 1	84.8 2	57.8 3	38.7 8	98.4 7	96.4 3
Rubber Plastic	95.8 4	97.4 9	0.82 4	1.70 9	0.01 0.02	0.02 0.02	87.5 0	87.5 0	93.5 4	91.0 6	97.8 2	99.55 5
Total	83.7 8	81.8 7	14.1 5	12.6 6	0.17 0.15	0.15 0.15	84.1 4	84.1 2	23.9 8	36.7 9	99.9 0	99.5 5

Source: author's calculations.

Over the post-reform period the value of the median at 84.12 per cent also means that 50 per cent of firms had technical efficiency scores of below 84.73 per cent while the other 50 per cent had technical efficiencies of above 84.12 per cent. We also report pre- and post-trade reform firm-specific technical efficiencies as a frequency distribution in Table 7.5. We assume that when technical efficiency is located between 0 and 25 per cent firms are considered as technically inefficient, when between 25 and 50 percent they are considered as less technically efficient, between 50 and 75 per cent as technically efficient and between 75 and 100 per cent as very technically efficient. Over both samples period the results in Table 7.6 show wide variation in the level of technical efficiency across the sample firms. Therefore, the reform of the trade regime led to considerable improvements in firms' ability to operate near the frontier of production.

By regressing the following relation, $\ln TE_t = a + b \cdot t$, where $\ln TE_t$ stands for the logarithm of firm-specific technical efficiency and t is time period, the average growth rate of firm-specific technical efficiencies is obtained. The rate of growth, say r , is calculated as $r = e^b - 1$. The estimated results show that pre-trade reform firm-specific technical efficiency decreased on average at a rate of -2.54 per cent (with paper and printing registering the highest decrease of about -7.31 per cent), while post-trade reform firm-specific technical efficiency increased on average at the rate of $+7.19$ per cent (with beverage and tobacco, and wood and furniture registering the highest rate of respectively $+7.88$ per cent and 7.94 per cent).

Table 7.5: Frequency Distribution of Pre(1)- and Post(2)- Trade Reform Technical Efficiency of Cameroonian Manufacturing, Sample Firms

Efficiency Level (%)	Number of Firms		Percentage	
	(1)	(2)	(1)	(2)
0.00–25.00	1	0	0.25	0.00
26.00–50.00	7	14	1.77	3.09
51.00–75.00	76	82	19.19	18.10
76.00–100.00	312	355	78.79	78.37
Total	396	453	100.00	100.00

Source: author's calculations.

Since the main objective of this chapter is to establish a relationship between trade regime and industrial performance, we now look at the patterns of association between the components of trade exposure measures and industrial performance measures, using both Pearson and Spearman rank correlations.¹¹ Table 7.6 shows the correlation of the measures of industrial performance (input elasticity, returns to scale, technical change, and technical efficiency) with the measures of foreign competition.

Concerning the top of Table 7.6, where the pre-trade reform components of foreign competition in relation to industrial performance measure are treated, the finding is that output elasticity with respect to foreigners and engineers, middle executives, and materials, returns to scale are negatively associated with official tariff rates (OTR). They are also negatively correlated with import penetration rate (MPR), but are positively associated with export shares (XS). On the other hand, output elasticity with respect to workers and unskilled workers, and capital inputs are rather negatively associated with export shares (XS). Surprisingly, there is a robust positive association between mean technical efficiency and openness as measured by official tariff rates (OTR).

The association between the mean technical efficiency and the import penetration rate is negatively significant. This means that the implementation of the import substitution policy affected negatively the technical ability of industrial sub-sectors. Also, export shares (XS), which are very low over the pre-reform period, are negatively correlated with mean technical efficiency.

Continuing analysis of the top of Table 7.6, we observe that there is in most cases robust association between changes in measures of exposure to domestic and international competition and measures of productive performance. This association is negative for output elasticity with respect to foreigners and engineers, middle executives, material inputs, technical change, and means technical efficiency, and positive for the returns to scale and the elasticity with respect to capital input.

Concerning the bottom of Table 7.6, for post-trade reform, we saw from the empirical results that almost all measures of industrial performance change (to the positive) when we shift from the pre-trade reform to the post-trade reform period.

Table 7.6 Cross-industry Pearson and Spearman Rank Correlation Indicators of Foreign Competition with Pre- and Post-Reform Performance Measures

Before Trade Reform																			
	E _{fc}		E _{mc}		E _{ww}		E _k		E _m		E _c		RTS			TC		MTE	
	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(S)	(P)	(S)	(P)	(S)	(P)	(S)
OTR	-0.26	-0.30	-	-0.72*	0.17	0.36	0.61**	0.37	-0.09	-0.12	-0.16	-0.18	-0.22	-0.25		0.29	0.32	0.42	0.49
				0.62*														**	**
				*															
ERP	0.70*	0.81*	-0.31	-0.36	-0.38	0.17	0.08	0.94*	-0.33	-0.38	0.31	0.36	0.21	0.25		0.63	0.71	0.07	0.08
																**	*		
MPR	-0.25	-0.30	0.16	0.19	0.01	0.17	-0.22	-0.25	0.18	0.20	0.29	0.33	0.18	-	-	0.22	-	-	
															0.52	0.46	0.48	0.56	
															**	*	*	*	*
XS	0.23	0.26	0.22	0.25	-0.24	-0.21	-0.42**	-	0.03	0.03	-0.37	-	-	-	-	-	-	-	-
							0.48*					0.43*	0.43*	0.50*		0.09	0.99*	0.13	0.15
							*					*	*	*					
ITI	0.44*	0.51*	-0.14	-0.17	0.50**	0.57**	-0.46**	-	0.03	0.03	0.29	0.34	0.10	0.11		-	-	0.20	0.24
	*	*					0.53*									0.03	0.03		
							*												
DOTR	0.27	0.32	0.01	0.22	0.31	0.35	-0.35	-	-0.01	-0.01	0.38	0.43*	0.30	0.35		-	-	0.06	0.07
							0.40*					*				0.18	0.20		
							*												
DERP	-	-	-0.15	-0.17	0.36	0.41	0.04	0.05	0.21	0.25	0.30	0.35	0.19	0.25		-	-	-	-
																0.41	0.46	0.21	0.24
																	*		
DMPR	0.46*	-0.05	-	-0.71*	0.74*	0.85*	-0.04	-0.05	-0.07	-0.08	0.29	0.34	0.08	0.10	0.14	-	0.42	0.49	
	*			0.61*												0.16	**	**	
				*															
DXS	-0.28	-0.32	0.46*	0.26	0.04	0.04	0.03	0.34	-0.07	0.08	0.20	0.24	0.19	0.23		-	-	-	-
				*												0.24	0.28	0.36	0.42
																			*
DTI	-0.20	-0.23	0.23	0.26	-0.14	-0.16	0.16	0.19	0.01	0.02	0.27	0.31	0.32	0.37		-	-	-	0.53
																0.16	0.18	0.45	**
																		*	
After Trade Reform																			
	E _{fc}		E _{mc}		E _{ww}		E _k		E _m		E _c		RTS			TC		MTE	
	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(P)	(S)	(S)	(P)	(S)	(P)	(S)	(P)	(S)
OTR	0.27	0.31	-	-0.73*	0.01	0.02	0.65**	0.75*	0.40	0.48*	-0.32	-0.37	0.30	0.35		0.61	0.70*	0.19	0.22
				0.63*						*						**	*		
				*															
ERP	-	0.68*	0.10	0.12	-	-	0.01	0.01	0.14	0.17	0.07	0.08	-0.34	-		0.02	0.02	0.10	0.12
		0.59*	*				0.47**	0.56**								0.40*			
															*				
MPR	-	0.74*	0.28	0.33	-	-	-0.09	-0.11	0.31	0.37	0.44	0.51*	-0.19	-0.22		0.01	0.01	0.46	0.54
		0.64*					0.48**	0.58**				*						**	**
		*																	
XS	-0.39	0.45	0.33	-0.38	-0.06	-0.07	-0.44**	-	-	-	-0.16	-0.18	-	-		-	0.72	0.59	0.69
		*					0.52*	0.57*	0.68*				0.58*	0.68*		0.63	*	**	**
							*	*	*				*						
ITI	-0.05	-0.06	0.19	0.21	-	-	-0.12	-0.14	-0.07	-0.08	0.27	0.31	-0.09	-0.10		-	-	-	-
							0.57**	0.69**								0.04	0.04	0.35	0.41

After Trade Reform

	E_{fe}		E_{me}		E_{ww}		E_k		E_m		E_c		RTS			TC		MTE	
DOTR	0.06	0.07	0.34	0.39	-	-	-0.33	-0.38	-0.24	-0.28	-0.03	-0.03	-0.27	-0.31	-	-	-	-	-
					0.61** 0.73**											0.10	0.12	0.35	0.41
DERP	0.53*	0.61*	0.14	0.16	-0.23	-0.27	0.06	0.06	0.48*	0.57*	0.41	0.48*	0.01	0.02		0.14	0.16	0.52	0.61
	*	*							*	*		*						**	**
DMPR	0.01	0.01	-	-0.51	-0.14	-0.17	0.53**	0.61*	0.45*	0.53*	-0.11	-0.13	0.20	0.24		0.54	0.61	0.84	0.98
			0.45*				*	*	*							**	**	*	*
			*																
DXS	-0.36	0.41	0.27	0.31	-	-	-0.18	0.21	0.06	0.08	0.42*	0.48*	-0.14	0.16		0.23	0.26	0.64	0.75
					0.41** 0.48**						*	*						**	*
DITI	-0.20	0.23	0.28	0.32	-0.30	-0.36	-0.20	0.23	0.04	0.05	0.46*	0.54*	-0.02	0.03		0.21	0.25	0.72*	0.84*
											*	*							

Source: author's calculations.

[NOTE : use minus for hyphen throughout table]

Key: (P) = Pearson correlation, (S) = Spearman correlation, MTE = mean technical efficiency, TC=technical change, RST = returns to scale, E_{fe} , E_{me} , E_{ww} , E_k , E_m and E_c are output elasticities with respect to foreigners and engineers, middle executives, workers and unskilled workers, capital, material and energy inputs, respectively.

* = significant at the 1% level, ** = significant at the 5% level.

However, we have yet to establish whether the cross-industry patterns of productive efficiency correlate in a similar way with measures of openness/exposure to foreign competition. We obtained consistency in the broad sense that most correlations at the bottom of Table 7.6 have signs opposite to those of the corresponding correlations at the top of Table 7.6. Among those that do not, many correlations are not significant. For example, before trade reform there are significant negative Pearson and Spearman correlations between changes in import penetration rates and mean technical efficiency. One interpretation is that import penetration during the pre-reform period shifted the demand for domestic products inward, and caused output levels to fall. However, during the post-reform period, there are robust positive associations between changes in import penetration rates and mean technical efficiency, meaning that heightened import penetration increased efficiency. The same pattern is observed for export shares. Finally, changes in official tariff rates (DOTR), effective protection rates (DERP) and the intra-industry trade index (DITI) are positively associated with most input elasticities. Exceptions occur in the case of Pearson correlation with respect to workers and unskilled workers, capital, and foreigners and engineers inputs elasticities. Also, there are strong Pearson and Spearman associations between changes in official tariff rates, intra-industry trade index, returns to scale, technical change, and mean technical efficiency. So, changes in openness as measured by changes in official tariff rates actually worsen technical efficiency while openness in the sense of changes in intra-industry trade index has promoted scale efficiency, technical change, and technical efficiency.

The censored estimation of equation (5) in equation (6) below gave the following results. The F test on the necessity of using multiplicative dummies was significant at the 5 per cent level. Therefore, we had the right to use in the model the interac-

tive variables between the trade reform dummy and other exogenous variables in the model. The Chow test¹² is significant at the 5 per cent level. This means that the hypothesis that the pre- and post-trade reform firm-specific technical efficiencies are the same is rejected. In other words, the trade reform positively affected the firms' technical efficiency. The results of estimating equation (5) also show quite a good fit.

The trade reform dummy is positive and significant at the 1 per cent level. This means that trade openness is an important variable fostering firms' technical ability. As expected, the dummy of political instability is negative and significant at the 10 per cent level. Also, macroeconomic instability plays a significant negative role at the 5 per cent level in explaining cross-firm differences in technical efficiency. The multiplicative dummies are negative and significant. Therefore, political and macroeconomic instability coupled with trade reform negatively affected firm-specific technical efficiencies, thus inhibiting the positive impact of the trade reform. Finally, the constant term is positive and significant at the 7 per cent level, meaning that other environmental omitted variables are important in explaining firm-level technical ability.

$$\ln TE = 0.947 + 0.43D_{trade} - 0.033DPINS - 0.391MINS - 0.012DDPINS - .36DMINS$$

(1.79)

(3.39)

(1.74)

(2.37)

(1.81)

(2.35)

(6)

R^2 (adjusted) = 0.3852; Chow Test = 12.81; N = 891.

Conclusion and Policy Implications

Using firm-level data, and by estimating pre-and post-trade reform stochastic frontier production function for seven Cameroonian industrial sub-sectors, namely, food, beverage and tobacco, textile and leather, wood and furniture, paper and printing, chemicals, and rubber, this study provides empirical evidence on the effects of trade reform on productive efficiency measures, including inputs elasticity, return to scale, technical change, and technical efficiency. Our empirical results reveal that trade reform or the reduction in protection and official tariff rates has a significant positive effect on most of the productive efficiency measures. In fact, by investigating whether there is a significant change following trade reform in those measures, the input elasticities of the years following trade reform are higher than those of the years before it. There are very large economies of scale after trade reform even though increasing returns to scale are observed in both periods. The results reported here also suggest that more open industrial sub-sectors (in the sense of import penetration rates and export shares) experienced faster technical change growth. Coming to technical efficiency, and in the years following trade reform, the firm-specific technical efficiencies are significantly higher than those of the pre-trade reform years. In fact, the post-trade reform firm-specific technical efficiencies increased on average at the rate of about 7.2 per cent (with more open industrial sub-sectors such as beverage and tobacco, and wood and furniture registering the highest increase of nearly 7.9 per cent, respectively). while the pre-trade reform

firm-specific technical efficiencies decreased on average at the rate of 2.5 per cent (with import substitution or less open industrial sub-sectors such as paper and printing registering the highest decrease of about 7.3 per cent). Coming to the question of correlation, and by using Pearson and Spearman rank correlation coefficients, gains in productive efficiency measures are robustly associated with increases in foreign competition.

In order to separate the effects of trade reform on productive efficiency from the effects of other macro variables, the results of the censored regressions show that trade reform positively and significantly affected plant-level technical efficiencies; and the political and macroeconomic instability negatively and significantly affected the technical efficiency of manufacturing firms. When coupled with the trade reform, the political and macroeconomic instability appear to have affected negatively firm-specific technical efficiencies, therefore masking the positive impact of the reform.

Given the findings of this study, it is important that the extent of the trade reform should be substantial especially in the industrial sectors, which are still not open in the sense of import penetration. Also, measures to foster exports are welcome. Finally, it is important to have a business-friendly environment, for example, by reducing macroeconomic and political instability.

Notes

1. In this context, Rodrick (1992:95) noted that 'The standard prescription to a country undergoing trade liberalization is to devalue the currency so as to offset any adverse effect the reform may have on the balance of payment.'
2. The UDEAC is composed of Equatorial Guinea, Congo, Chad, Cameroon, Gabon and the Central African Republic. The group was ratified by the Treaty of Brazzaville in 1964. The same grouping is today called Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC).
3. For more developments, see among others Havrylyshyn (1990), Nishimizu and Page (1991), Falvey and Dong Kim (1992), Pack (1993) and Dornbursch (1995).
4. Of course markets in protected economies are narrow, and lack of competition from the rest of the world fosters oligopoly and inefficiency.
5. Some of the best-known are: Krueger (1978), Papageorgiou et al. (1991), Dollar (1992), Greenaway (1994), Shafaeeddin (1995) and Kruger et al. (2000).
6. Edwards (1998) points out that factors such as institution, political instability and macroeconomic instability might be important determinants of total factor productivity growth as well.
7. However, the theoretical work on this subject has not specifically focused on productive efficiency growth. Therefore in a way the question of how inflation affects productivity is still somewhat open.
8. We used only firm-specific technical efficiencies as the dependent variable because this measure of productive efficiency allows for continuous values.
9. In the transport materials sector, this can partly be explained by the important phenomenon of re-exportation of imported spare parts.

10. See Fisz (1963) for an explanation of this test.
11. Although not all patterns in the data are picked up by these summary statistics, the Spearman rank correlation coefficient, which is purely ordinal, does a better job of picking up non-linear associations and is robust with respect to outlier, while relationships that are approximately linear are better captured by Pearson correlation coefficients.
12. The Chow test is performed as follows: first, we combine the pre- and post-trade reform observations, and derive the residual sum of square (RSS_1). Second, we estimate the pre- and post-trade reform samples individually, and obtain their respective RSS, and then add these RSS, say, $RSS_4 = RSS_2 + RSS_3$ where the degree of freedom is $n_1 + n_2 - 2k$. Finally, we obtain $RSS_5 = RSS_1 - RSS_4$ and the statistic $F = (RSS_5/k) / (RSS_4/(n_1 + n_2 - 2k))$, which follows the F statistic with the degree of freedom k and $n_1 + n_2 - 2k$.

References

- Ahluwalia, I.J., 1991, *Productivity in Indian Manufacturing*, Oxford, New York: Oxford University Press.
- Aigner, D.J., C.A.K. Lovell and P.J. Schmidt, 1977, 'Formulation and Estimation of Stochastic Frontier Production Models', *Journal of Econometrics*, Vol. 6, pp. 21–37.
- Barro, R.J., 1996, *Determinants of Economic Growth: A Cross-country Empirical Study*, Working Paper No. 5698, National Bureau of Economic Research.
- Collier, P., D. Greenaway and J. Gunning, 1997, 'Evaluating Trade Liberalization: A Methodological Framework'. In: A. Oyejide, I. Elbadawi and P. Collier, eds, *Regional Integration and Trade Liberalization in Sub-Saharan Africa*, vol. 1: *Framework and Methodical Perspectives*, London: Macmillan Press.
- Cotfas, M., 1997, 'Essays on Productivity and Efficiency in the Romanian Cement Industry', Doctoral thesis, Göteborg: Göteborg University (Sweden).
- Dollar, D., 1992, 'Outward Oriented Developing Economics Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976–1985', *Economic Development and Cultural Change*, Vol. 40, pp. 321–44.
- Dornbusch, R., 1995, 'The Case for Trade Liberalization in Developing Countries'. In: Philip King, ed., *International Economics and International Economic Policy: A Reader*, 2nd edn, New York: McGraw-Hill.
- Edwards, S., 1998, 'Openness, Productivity and Growth: What Do We Really Know?', *Economic Journal*, Vol. 108, pp. 383–98.
- Falvey, A. and C.D. Kim, 1992, 'Timing and Sequencing Issues in Trade Liberalization', *Economic Journal*, Vol. 102, pp. 908–24.
- Farrell, M., 1957, 'The Measurement of Productive Efficiency', *Journal of the Royal Statistical Society*, Series A, pp. 283–90.
- Fischer, S., 1993, 'The Role of Macroeconomic Factors in Growth', *Journal of Monetary Economics*, Vol. 32, No. 3, pp. 485–512.
- Fisz, M., 1963, *Probability Theory and Mathematical Statistics*, New York: Wiley.
- Gokcekus, O., 1997, 'Trade Liberalization and Productivity Growth: New Evidence from the Turkish Rubber Industry', *Applied Economics*, Vol. 29, pp. 639–45.
- Greenaway, D., 1994, 'What Does Liberalization Do for Exports and Growth?', *Weltwirtschaftliches Archiv*, Vol. 130, pp. 159–74.

- Harrison, A.E., 1994, 'Productivity, Imperfect Competition and Trade Reform: Theory and Evidence', *Journal of International Economics*, Vol. 36, pp. 53–73.
- Havrylysyn, O., 1990, 'Trade Policy and Productivity Gains in Developing Countries: A Survey of the Literature', *World Bank Research Observer*, Vol. 5, No. 1, pp. 1–24.
- Johnson, B. and T. Sheely, eds, 2000, *2000 Index of Economic Freedom*, Washington, DC: The Heritage Foundation.
- Kamgnia, B., 1994, *Impact de la Réforme de la Politique Commerciale au Cameroun: Recettes Publiques et Performance Economique*, Rapport Final présenté au Réseau sur les Politiques Industrielles en Afrique, Dakar. Sénégal.
- Kim, E., 2000, 'Trade Liberalization and Productivity Growth in Korean Manufacturing Industries: Price Protection, Market Power, and Scale Efficiency', *Journal of Development Economics*, Vol. 61, pp. 55–83.
- Krishna, P. and D. Mitra, 1998, 'Trade Liberalization, Market Discipline and Productivity Growth: New Evidence from India', *Journal of Development Economics*, Vol. 56, pp. 447–62.
- Krueger, A., 1978, *Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences*, Cambridge, MA: Ballinger Publishing Company for National Bureau of Economic Research.
- Kruger, J.J., U. Cantner and H. Hanusch, 2000, 'Total Factor Productivity, the East Asian Miracle, and the World Production Frontier', *Weltwirtschaftliches Archiv*, Vol. 136, pp. 111–36.
- Meeusen, W. and J. van den Broeck, 1977, 'Efficiency Estimation from Cobb–Douglas Production Function with Composed Error', *International Economic Review*, Vol. 18, No. 2.
- Nishimizu, M. and S. Robinson, 1984, 'Trade Policies and Productivity Change in Semi-Industrialized Countries', *Journal of Development Economics*, Vol. 16, pp. 177–206.
- Nishimizu, M. and J.M. Page Jr, 1991, 'Trade Policy, Market Orientation, and Productivity Change in Industry'. In: J. de Melo and A. Sapir, eds, *Trade and Economic Reform, North, South, and East: Essays in Honor of Bela Balassa*, Oxford: Basil Blackwell.
- Njikam, O., 2003, *The Effects of Trade Liberalization on Productive Efficiency: Some Evidence from the Electrical Industry in Cameroon*, Research Paper, Nairobi: AERC, pp. 1–38.
- Pack, H., 1993, 'Productivity and Industrial Development in Sub-Saharan Africa', *World Development*, Vol. 21, No. 1, pp. 1–16.
- Papageorgiou, D., M. Michealy and A. Choksi, 1991, *Liberalizing Foreign Trade: Lessons from Experience in Developing World*, Oxford and Cambridge, MA: Basil Blackwell.
- Reifschneider, D. and S. Rodney, 1991, 'Systematic Departure from the Frontier: A Framework for the Analysis of Firm Inefficiency', *International Economic Review*, Vol. 32, No. 3, pp. 716–23.
- Rodrick, D., 1992, 'The Limits of Trade Policy Reform in Developing Countries', *Journal of Economic Perspective*, Vol. 6, No. 1, pp. 87–105.
- Shafaeddin, M., 1995, 'The Impact of Trade Liberalization on Export and GDP Growth in Least Developed Countries', *UNCTAD Review*, United Nations.

Tybout, J.R. and S. Westbrook, 1995, 'Trade Liberalization and the Dimensions of Efficiency Change in Mexican Manufacturing Industries', *Journal of International Economics*, Vol. 39, pp. 53–78.

Appendix

Table 7A.1: Summary Statistics of Pre(1)- and Post(2)-trade Reform of the Data Set

Variables	Food Processing				Beverage and Tobacco			
	Mean		Standard Deviation		Mean		Standard Deviation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
LnQ	7.19	7.53	1.14	1.20	4.62	5.26	9.04	9.31
LnL1	2.62	2.82	1.20	1.14	1.10	0.69	6.21	5.17
LnL2	2.54	2.70	1.44	1.50	0.00	0.00	3.40	2.98
LnL3	6.08	5.84	2.76	2.65	2.20	2.08	1.55	1.60
LnK	7.59	7.68	1.24	1.34	5.17	4.84	1.10	0.69
LnM	6.65	7.07	1.12	1.25	3.99	3.56	6.36	6.03
LnE	4.29	4.34	1.10	1.02	1.96	1.67	7.31	6.41
No. Observations	76	75			6.52	6.12	4.87	4.59
					52	50	2.02	1.31
					8.46	9.31		
Variables	Textiles and Leather				Wood and Furniture			
	Mean		Standard Deviation		Mean		Standard Deviation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
LnQ	7.39	6.60	1.69	2.43	3.47	3.02	10.17	10.81
LnL1	2.94	2.80	1.63	1.56	0.00	0.69	5.47	5.69
LnL2	2.29	2.23	1.49	1.51	0.00	0.00	4.95	5.23
LnL3	5.70	4.85	1.69	1.43	3.26	3.26	8.85	7.73
LnK	8.12	7.89	1.72	1.69	4.40	4.40	10.28	10.86
LnM	6.74	5.72	2.04	2.89	2.54	0.21	11.29	10.31
LnE	4.14	3.75	2.17	2.20	1.39	0.22	7.65	7.42
No. Observations	32	40			4.33	4.01	2.04	1.77
					68	70	0.41	0.79
					8.89	7.03		
Variables	Paper and Printing				Chemical Products			
	Mean		Standard Deviation		Mean		Standard Deviation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
LnQ	6.25	6.57	0.95	1.09	4.56	4.06	8.14	8.75
LnL1	2.13	2.22	0.73	0.79	0.00	1.10	3.33	3.66
LnL2	2.18	2.35	0.86	0.97	0.00	0.00	3.87	4.26
LnL3	4.13	4.44	1.94	2.01	1.95	1.39	9.63	9.11
LnK	6.26	8.88	1.00	2.80	3.63	0.33	7.90	14.00
LnM	5.73	6.07	1.23	1.28	1.55	2.63	7.66	8.55
LnE	2.64	2.72	0.94	1.00	0.44	0.40	4.43	7.22
No. Observations	60	60			3.94	3.74	1.74	1.70
					68	85	0.40	0.40
					9.00	7.95		
Variables	Rubber and Plastic Products							
	Mean		Standard Deviation		Mean		Standard Deviation	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
LnQ	6.05	1.77	1.41	0.28	3.12	1.35	8.29	2.29
LnL1	2.00	2.01	1.57	0.86	0.00	0.00	5.05	5.13
LnL2	2.17	1.83	1.58	1.30	0.69	0.00	5.83	5.97
LnL3	4.82	4.11	2.35	0.95	2.08	1.39	8.63	8.50
LnK	6.89	7.08	1.75	1.33	4.05	4.77	10.92	11.08
LnM	5.67	5.23	1.35	0.30	3.16	2.29	7.60	8.18
LnE	3.25	2.95	1.59	0.85	0.24	0.29	6.54	6.55
No. Observations	40	50						

Source: author's claculations.

Table 7A2: The Pre(1)- and Post(2)- Trade Reform MLE of the Translog Production Function for Cameroon Manufacturing Industries

Variables	Food Processing				Beverage and Tobacco				Textiles and Leather			
	Coefficient		t-value		Coefficient		t-value		Coefficient		t-value	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Constant	-5.57	0.54	-1.52	2.24	-3.61	9.95	-2.39	4.46	2.54	0.54	2.65	2.05
LnK	0.38	0.60	2.57	1.68	0.34	-0.22	1.72	-2.52	0.01	0.03	1.15	3.44
LnL ₁	0.67	0.94	3.59	3.51	-0.88	-0.25	-2.54	-2.05	0.38	0.10	1.68	3.32
LnL ₂	-0.85	-0.35	-1.70	-2.40	0.96	0.45	1.75	3.34	-0.30	-0.01	-2.39	-1.50
LnL ₃	0.32	0.09	2.53	3.11	-0.41	0.31	-3.41	1.13	-0.08	0.30	-2.67	1.73
LnE	0.64	0.11	3.73	2.05	0.11	0.38	3.59	1.28	0.26	0.39	2.99	2.17
LnM	0.05	0.36	1.26	2.41	-0.09	0.71	-4.04	2.07	0.56	0.47	4.08	9.93
T	0.32	0.22	2.86	1.51	0.26	0.71	1.21	3.36	0.10	-0.06	1.22	-1.07
(lnK) ²	-0.01	-0.04	-2.12	-2.38	-0.55	0.36	-1.16	2.32				
(LnL ₁) ²	0.09	0.56	1.65	2.36	-0.09	-0.26	-0.36	-1.23				
(LnL ₂) ²	-0.26	-0.01	-4.37	-1.06	0.17	0.05	1.44	2.04				
(LnL ₃) ²	-0.02	-0.02	-1.10	-1.61	0.02	-0.02	2.83	-2.05				
(LnE) ²	-0.07	0.11	-3.52	2.22	0.70	0.09	1.99	1.15				
(LnM) ²	0.15	-0.11	1.82	-1.36	0.07	-0.11	2.64	-2.19				
T ²	0.01	-0.01	2.28	-2.30	-0.04	-0.03	-1.09	-1.39				
LnK*lnL ₁	-0.37	-0.37	-1.74	-1.50	0.42	-0.02	3.67	-2.01				
LnK*lnL ₂	0.38	0.18	2.12	2.97	-0.05	-0.14	-1.12	-2.22				
LnK*lnL ₃	0.03	0.11	3.32	3.89	0.22	0.02	0.83	1.03				
LnK*lnE	0.12	-0.16	2.73	-1.50	-0.56	-0.47	-1.13	-1.28				
LnK*lnM	-0.26	0.11	-1.83	1.52	0.74	0.09	1.20	1.05				
LnK*T	-0.03	-0.02	-1.41	-1.40	-0.28	-0.09	-1.50	-1.28				
LnL ₁ *lnL ₂	0.17	-0.28	1.24	-2.81	-0.08	0.21	-2.30	2.20				
LnL ₁ *lnL ₃	0.17	-0.16	1.44	-2.78	-0.09	0.10	-2.52	2.19				
LnL ₁ *lnE	-0.30	-0.53	-1.48	-1.14	0.27	0.24	3.49	2.16				
LnL ₁ *lnM	0.22	0.45	1.72	1.35	-0.18	-0.05	-1.59	-1.07				
LnL ₁ *t	-0.03	-0.16	-2.34	-1.57	-0.02	0.04	-2.29	2.14				
LnL ₂ *lnL ₃	-0.22	-0.01	-3.82	-2.06	-0.03	-0.03	-3.21	-2.14				
LnL ₂ *lnE	0.27	-0.04	1.79	-2.09	-0.14	-0.14	-1.28	-1.15				
LnL ₂ *lnM	-0.02	0.19	-2.12	3.56	-0.09	0.01	-2.28	-2.01				
LnL ₂ *t	0.12	-0.01	1.64	-1.01	0.10	-0.03	2.91	-2.01				
LnL ₃ *lnE	0.06	0.22	3.63	1.26	-0.16	-0.08	-0.61	-2.11				
LnL ₃ *lnM	-0.06	-0.16	-1.59	-2.02	-0.04	-0.07	-2.22	-1.03				
LnL ₃ *t	-0.01	0.03	-1.02	1.14	-0.04	-0.02	-1.56	-1.13				
LnE*lnM	-0.13	0.05	-2.86	2.19	-0.42	0.15	-1.94	2.09				
LnE*t	-0.04	0.16	-2.45	1.49	0.16	0.06	1.07	1.14				
LnM*t	-0.03	-0.06	-3.93	-1.10	0.03	-0.07	2.43	-2.02				
Variance ratio	0.85	0.13	6.67	2.06	0.56	3.41	2.49	3.11	0.94	0.19	4.69	7.25
Total variance	0.58	0.10	5.46	3.39	0.44	0.51	.33	5.55	0.24	0.13	4.37	3.59
Log-likelihood	31.5	-31.5	/	/	-62.6	-24.9	/	/	-5.9	-13.2	/	/
Variables	Wood and Furniture				Paper and Printing				Chemical Products			
	Coefficient		t-value		Coefficient		t-value		Coefficient		t-value	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Constant	1.55	7.86	1.44	1.75	1.94	2.64	5.61	6.19	1.55	2.04	1.11	2.50
LnK	0.06	0.74	2.06	3.14	0.14	-0.02	3.25	0.54	-0.70	-0.35	-1.59	2.40
LnL ₁	0.09	0.82	3.49	1.58	0.13	0.04	1.42	2.27	0.21	0.11	2.18	1.06
LnL ₂	0.73	0.14	2.53	2.16	0.08	0.05	1.31	1.60	0.08	0.98	1.17	1.03
LnL ₃	-0.37	-0.81	-1.30	-1.96	0.15	0.05	4.92	1.19	0.44	-0.04	1.59	2.06
LnE	0.51	-0.37	1.72	-2.32	0.42	0.37	4.75	4.18	1.41	0.16	2.51	2.56
LnM	0.18	0.46	1.16	3.45	0.20	0.52	3.31	6.97	0.53	0.52	1.09	2.23

	Wood and Furniture				Paper and Printing				Chemical Products			
Variables	Coefficient		t-value		Coefficient		t-value		Coefficient		t-value	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
T	0.35	-0.23	1.44	-3.34	0.02	-0.01	0.82	-2.22	-0.11	0.19	-0.48	3.38
(lnK) ²	0.04	-0.07	2.26	-1.63					0.05	-0.11	2.28	-1.61
(lnL ₁) ²	-0.33	0.88	-1.16	2.62					-0.02	0.11	-1.22	1.85
(lnL ₂) ²	-0.12	-0.15	-4.37	-1.52					-0.01	-0.01	-1.24	-2.51
(lnL ₃) ²	-0.10	0.05	-1.69	1.97					0.02	0.02	3.44	3.29
(lnE) ²	0.15	-0.11	-3.39	-1.80					0.01	-0.02	2.15	-1.20
(lnM) ²	-0.18	-0.09	1.61	-2.78					-0.03	-0.06	-1.73	-3.49
T ²	-0.13	0.01	1.99	2.30					0.01	-0.02	1.13	-1.77
LnK*lnL ₁	0.34	-0.74	1.15	-1.60					0.25	0.10	2.91	0.71
LnK*lnL ₂	-0.40	0.44	2.96	1.96					-0.07	0.01	-1.61	4.02
LnK*lnL ₃	0.08	0.21	3.32	1.57					-0.25	0.17	-1.14	3.58
LnK*lnE	-0.36	0.33	2.73	3.83					0.17	-0.12	1.06	-0.81
LnK*lnM	0.15	0.18	-1.83	4.31					0.13	0.04	2.86	1.21
LnK*T	-0.48	0.03	-1.41	1.98					-0.01	-0.07	-1.14	-2.86
LnL ₁ *lnL ₂	0.09	-0.42	1.24	-2.98					0.07	-0.01	1.38	-2.10
LnL ₁ *lnL ₃	-0.18	0.03	1.44	1.02					0.07	-0.20	2.88	-1.09
LnL ₁ *lnE	0.26	0.13	-1.48	2.25					-0.14	-0.11	-1.59	-1.72
LnL ₁ lnM	-0.05	-0.45	1.72	-1.42					-0.09	0.10	-0.84	2.77
LnL ₁ *t	0.46	0.06	-2.34	3.43					-0.10	0.03	-2.54	2.54
LnL ₂ *lnL ₃	0.12	-0.81	-3.82	-4.42					0.02	0.05	0.47	1.38
LnL ₂ *lnE	0.09	-0.25	1.79	-1.07					-0.05	0.02	-1.80	2.03
LnL ₂ *lnM	0.32	0.63	2.12	2.53					-0.04	-0.03	-2.11	-1.41
LnL ₂ *t	-0.13	-0.08	1.64	-1.98					0.06	-0.01	1.03	-2.25
LnL ₃ *lnE	0.02	0.05	3.63	2.28					0.08	0.08	1.79	1.34
LnL ₃ *lnM	0.24	-0.01	-1.59	-3.07					-0.02	-0.12	-2.21	-1.93
LnL ₃ *t	-0.01	-0.01	-1.02	2.41					0.15	-0.04	2.53	-2.41
LnE*lnM	0.19	-0.03	-2.86	-2.22					-0.11	0.14	-1.32	2.83
LnE*t	-0.04	-0.02	-2.45	-1.14					-0.05	0.10	-1.79	1.18
LnM*t	0.17	0.01	3.93	2.13					-0.08	0.02	3.72	2.29
Variance ratio	0.99	0.99	7.51	4.32	0.75	0.94	2.14	8.09	0.95	0.74	5.10	3.08
Total variance	0.14	0.11	8.78	7.95	0.42	0.36	3.93	1.21	0.04	0.32	5.10	1.94
Log-likelihood	-15.7	-29.6	/	/	-27.9	-21.3	/	/	-47.2	-3.4	/	/
Rubber and Plastic												
Variables	Coefficient		t-value									
	(1)	(2)	(1)	(2)								
Constant	5.16	0.07	1.67	2.58								
LnK	-0.44	0.09	-3.31	3.59								
LnL ₁	0.12	0.17	2.77	2.75								
LnL ₂	0.37	-0.19	1.38	1.62								
LnL ₃	0.17	0.18	0.31	2.88								
LnE	-0.96	-0.23	-1.97	-1.86								
LnM	-0.19	0.39	-2.71	-1.37								
T	0.09	-0.02	2.45	2.16								
(lnK) ²	0.56	0.12	4.71	1.28								
(lnL ₁) ²	0.58	0.07	1.19	1.92								
(lnL ₂) ²	0.18	-0.03	1.11	-1.27								
(lnL ₃) ²	-0.34	0.02	-1.35	-1.68								
(lnE) ²	0.71	0.01	1.63	3.04								
(lnM) ²	0.41	-0.11	2.04	-1.35								
T ²	0.01	-0.05	1.83	-1.80								
LnK*lnL ₁	-0.15	-0.74	-2.01	-1.62								
LnK*lnL ₂	0.89	-0.13	1.71	-1.88								
LnK*lnL ₃	0.10	-0.06	2.56	-1.35								

Variables	Rubber and Plastic			
	Coefficient		t-value	
	(1)	(2)	(1)	(2)
LnK^*LnE	-0.15	0.06	-2.80	1.40
LnK^*LnM	0.70	-0.08	3.55	-1.10
LnK^*T	0.64	-0.01	3.06	-1.46
$\text{LnL}_1^*\text{LnL}_2$	0.57	-0.04	1.64	-0.17
$\text{LnL}_1^*\text{LnL}_3$	-0.23	-0.01	-2.89	3.31
LnL_1^*LnE	0.72	0.01	2.71	3.90
LnL_1^*LnM	-0.43	0.05	-2.91	2.09
LnL_1^*t	-0.19	-0.01	-4.26	-1.07
$\text{LnL}_2^*\text{LnL}_3$	-0.20	0.02	-1.92	5.29
LnL_2^*LnE	-0.35	-0.01	-1.97	-1.42
LnL_2^*LnM	-0.08	-0.02	-2.49	-1.14
LnL_2^*t	0.29	0.11	1.65	1.56
LnL_3^*LnE	-0.25	0.02	3.21	1.75
LnL_3^*LnM	0.26	-0.05	1.16	-1.03
LnL_3^*t	-0.99	-0.03	-2.48	-2.00
LnE^*LnM	-0.11	-0.01	-1.59	-1.30
LnE^*t	-0.89	0.10	-2.49	2.42
LnM^*t	0.13	0.05	3.86	2.03
Variance ratio	0.13	0.91	2.95	5.74
Total variance	0.15	0.03	1.19	3.82
Log-likelihood	-21.7	-120	/	/

Source: author's calculations.

Table 7A.3: Pre(1)- and Post(2)- Trade Reform Production Elasticity for Cameroon Manufacturing Industries

Inputs	Food Proce.		Beverage		Textiles		Wood		Paper & printing		Chemicals		Rubber	
	Elasticity		Elasticity		Elasticity		Elasticity		Elasticity		Elasticity		Elasticity	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Foreigners	0.63	0.72	0.01	0.41	0.38	0.10	0.29	0.85	0.13	0.04	0.20	0.10	0.16	0.23
Middle	-	-	-	-	-	-	0.08	-	0.08	0.05	0.06	0.20	0.33	-
exec.	0.53	0.32	0.87	0.42	0.30	0.01	-	0.09	-	-	-	-	-	0.15
Workers	0.25	0.13	0.40	0.36	-	0.30	-	0.37	0.15	0.05	0.42	0.06	0.16	0.17
					0.08		0.42							
Capital	0.27	0.49	0.72	0.86	0.01	0.03	0.77	0.06	0.14	-	-	-	-	0.10
										0.02	0.66	0.30	0.41	
Materials	0.03	0.47	0.34	0.76	0.56	0.47	0.35	0.47	0.20	0.52	0.52	0.48	-	0.39
													0.24	
Energy	0.57	0.14	0.24	0.02	0.26	0.39	0.05	0.02	0.42	0.37	0.39	0.03	-	-
													0.77	0.28
RTS	1.22	1.63	0.84	1.99	0.83	1.27	1.12	1.68	1.12	1.01	0.93	0.57	-0.77	0.46

Source: author's calculations.

Table 7A4: Pre(1)- and Post(2)- Trade Reform Firm-Specific Technical Efficiency (%) for Cameroon Manufacturing Industries

	Food Proces.		Beverage		Textiles		Wood		Paper & Printing		Chemicals		Rubber	
Firms	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
1	89.87	91.91	98.78	90.84	87.00	87.14	97.85	92.51	98.84	81.14	94.48	68.07	95.94	94.08
2	84.35	84.87	98.69	81.83	67.67	92.90	86.31	54.30	76.18	83.34	87.65	67.42	95.94	97.86
3	79.01	64.23	92.51	91.66	86.79	90.35	96.79	55.34	88.28	73.47	97.24	79.21	95.47	99.53
4	95.57	79.08	91.96	87.68	60.48	81.80	97.43	94.85	79.39	74.71	57.83	86.47	96.00	94.28
5	68.76	83.99	98.87	85.28	67.58	86.36	55.11	96.10	72.54	93.90	89.33	92.36	95.91	97.23
6	90.51	88.58	98.91	78.99	85.59	87.80	86.42	42.19	95.01	68.35	93.10	83.01	95.89	97.38
7	85.25	86.48	93.57	82.28	81.26	88.32	85.40	62.39	78.36	67.65	93.64	86.35	95.69	98.25
8	91.92	81.60	98.66	86.70	88.09	88.75	57.60	97.77	88.46	59.30	91.32	90.65	95.99	98.56
9	80.12	72.44	93.50	77.17	56.45	88.47	97.53	67.92	72.08	59.75	95.92	82.36	94.76	98.73
10	91.59	82.07	93.72	56.35	59.94	85.42	96.23	84.78	59.36	97.06	68.43	66.86	96.73	97.86
11	85.67	78.76	99.05	85.33	79.20	91.27	80.44	69.87	64.43	68.36	91.09	89.82	96.11	99.03
12	85.60	86.97	85.16	86.48	27.30	81.99	97.33	62.48	93.58	56.61	95.49	38.76	95.43	97.60
13	82.42	82.89	58.17	83.66	92.77	89.70	93.61	84.39	88.47	71.44	84.02	94.34	95.66	98.18
14	88.18	82.92	83.23	90.10	78.00	88.75	86.85	97.95	87.70	61.84	93.53	84.60	96.03	97.90
15	95.77	89.81	77.41	82.38	78.62	88.35	79.22	91.56	83.21	45.89	85.95	88.21	95.58	96.10
16	81.46	82.13	98.89	88.20	85.00	84.98	89.85	78.55	56.86	81.23	88.99	77.73	96.05	97.39
17	89.41	88.54	98.42	82.16	54.43	90.03	77.06	78.19	89.00	91.89	86.65	80.33	97.82	99.25
18	78.27	70.54	93.29	84.84	87.98	91.38	66.54	52.38	95.36	68.96	81.98	83.52	95.97	96.11
19	87.90	87.14	89.62	83.15	78.82	91.01	87.61	88.41	72.33	85.12	93.49	85.22	95.77	98.40
20	47.70	85.00	99.21	88.52	37.06	91.01	84.22	85.74	78.44	90.13	81.03	84.78	95.91	96.80
21	88.07	80.71	93.81	82.75	69.57	90.21	88.31	90.95	99.90	75.53	97.07	86.02	96.06	91.06
22	80.75	86.86	96.06	84.65	67.29	89.74	97.78	81.71	80.78	73.99	81.11	78.45	96.02	96.65
23	94.09	83.36	98.91	87.35	72.52	87.87	70.91	66.33	89.45	55.54	90.06	85.06	95.62	96.92
24	75.78	81.62	94.64	83.38	45.07	87.42	97.07	88.03	84.60	69.01	80.04	83.65	96.05	97.25
25	88.19	76.01	88.42	87.82	59.03	87.82	83.09	96.21	58.45	39.68	88.21	86.59	96.07	99.11
26	88.69	91.87	98.86	81.64	81.82	88.85	75.98	91.12	78.91	81.67	87.13	92.02	96.29	98.44
27	85.53	52.37	98.41	85.95	87.81	90.95	98.04	92.13	59.02	64.62	86.17	69.51	93.54	97.50
28	92.47	84.82	98.53	84.98	94.18	88.82	81.37	97.91	77.97	57.35	79.76	87.32	96.57	95.68
29	76.53	83.86	76.86	82.06	58.04	87.61	65.43	96.00	72.47	68.80	89.31	70.22	95.97	97.67
30	88.40	81.85	75.19	82.23	82.69	90.35	83.15	73.35	83.98	44.52	98.47	72.88	96.02	98.66
31	92.64	82.51	87.88	87.43	74.92	87.67	52.85	47.04	52.66	44.83	77.07	82.10	96.47	98.58
32	77.98	85.66	97.90	78.77	51.21	85.92	87.17	98.26	74.01	Na	84.85	84.43	95.88	98.15
33	92.15	76.87	98.72	Na		85.61	84.56	88.33	66.91	Na	66.65	70.76	94.12	95.76
34	72.16	91.27	81.03	Na		85.33	97.14	44.59	67.44	86.71	88.84	72.62	97.45	98.35
35	85.62	67.80	98.93	80.67		89.39	97.15	56.12	79.71	58.48	95.15	63.21	95.85	99.55
36	79.59	91.10	79.72	85.00		89.31	73.93	90.99	94.29	74.66	87.14	83.08	95.19	98.87
37	92.82	85.93	78.70	77.83		90.20	97.31	Na	62.73	59.10	75.96	76.44	96.97	95.89
38	87.87	80.15	98.64	79.83		88.92	97.63	77.21	74.48	55.85	92.47	92.49	93.61	99.13
39	81.25	77.11	97.95	Na		87.28	97.71	Na	69.57	53.22	79.03	78.72	96.11	97.78
40	92.64	83.50	98.08	85.01		86.15	71.61	97.61	52.23	Na	95.53	71.39	95.93	97.17
41	91.06	85.04	98.49	78.51			23.98	75.11	60.76	78.36	97.50	80.27		99.23
42	88.12	81.72	98.96	83.92			97.56	66.22	80.87	Na	90.96	90.68		99.17
43	75.74	90.66	98.67	83.02			64.40	57.46	84.35	60.37	78.00	79.22		99.17
44	79.23	69.96	91.41	85.68			32.84	97.39	83.47	70.57	87.33	80.00		95.36
45	79.77	Na	71.27	82.31			67.46	70.60	74.08	50.17	89.56	83.14		96.66
46	79.76	74.60	89.90	Na			94.91	79.71	62.63	81.86	71.21	77.29		99.14
47	95.44	76.12	98.73	Na			76.42	Na	52.70	Na	98.42	85.63		93.74
48	93.77	85.40	98.87	80.67			73.72	70.97	51.20	Na	97.03	84.46		99.14
49	89.05	77.97	71.31	85.00			69.09	93.51	55.29	76.76	85.01	86.16		96.96

Firms	Food Proces.		Beverage		Textiles		Wood		Paper & Printing		Chemicals		Rubber	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
50	86.70	78.69	89.28	77.83			98.39	93.22	77.78	37.24	86.55	81.42		97.47
51	90.90	74.59	98.63	79.83			36.39	68.91	89.51	76.34	75.87	87.37		
52	93.96	Na	97.60	Na			78.58	96.29	82.20	41.16	84.28	91.40		
53	87.87	Na					58.65	93.64	57.37	56.68	92.51	75.80		
54	87.17	68.24					74.39	Na	67.34	51.72	72.58	85.40		
55	91.33	Na					97.78	79.71	54.88	Na	94.98	81.12		
56	93.22	89.86					91.14	Na	51.02	84.70	86.18	67.25		
57	64.60	81.73					89.04	83.82	82.00	Na	78.47	96.43		
58	68.52	88.06					54.20	96.69	51.30	Na	92.87	80.23		
59	92.05	84.85					97.82	84.44	69.79	73.43	86.42	90.05		
60	93.14	82.75					97.70	93.82	92.16	49.45	90.80	94.17		
61	93.31	84.72					96.50	36.79		84.59	80.27	86.61		
62	92.51	77.90					75.11	81.73		Na	69.25	76.77		
63	87.65	73.67					97.80	51.87		Na	88.29	73.41		
64	69.77	Na					96.82	Na		80.81	92.54	77.28		
65	89.10	74.74					57.76	73.75		67.09	88.27	78.42		
66	67.11	79.73					36.60	78.71		62.45	90.36	82.60		
67	64.00	87.00					55.74	63.80		84.14	79.80	74.74		
68	89.05	90.92					97.87	71.94		60.42	87.89	79.45		
69	70.91	79.59						92.04		48.49		74.61		
70	94.20	81.25						96.19		Na		78.51		
71	56.47	Na						Na		66.99		86.42		
72	94.06	Na						78.02		Na		83.47		
73	84.37	72.51						Na		Na		81.91		
74	83.96	Na						90.79		52.15		82.96		
75	93.18	88.23						93.16		64.53		77.88		
76	84.74	78.52						96.04				76.24		
77		90.71						95.82				86.53		
78		87.48						37.51				86.15		
79		84.39						96.57				78.92		
80		85.59						67.18				84.75		
81		81.29						Na				86.84		
82		73.75						78.45				77.02		
83		Na						93.32				78.64		
84		77.93						78.30				81.51		
85		78.25						88.91				90.10		
86		89.58												
87		86.18												
88		80.53												
89		80.75												
90		Na												
91		Na												
92		80.03												
93		Na												
94		87.17												
95		79.09												

Source: author's calculations.

Cameroon's Poverty Profile in 1996

Aloysius Ajab Amin, Francis Menjo Baye, Samuel Fambon
Isidor Noumba, Isaac Tamba and Regina Tawah

Introduction

Poverty studies became topical during the 1960s and 1970s. This interest was strengthened by the availability of data as well as the concerns of the period. Today, the distribution of income still remains a topical issue. In effect, in many countries, there are various groups of households with different standards of living, which are active in different areas. The existence of these differences shows that it is necessary to consider the poverty issue at a more disaggregated level, that is, at the microeconomic level; we do this in this chapter by using the database of the 1996 Cameroon Household Survey (ECAM 1996). During the last twenty years or so, a number of studies on poverty in developing countries have been carried out using microeconomic databases, especially those concerned with household surveys.

An in-depth study of poverty profiles requires dealing with basic issues including the following three, which seem the most important to us: the choice of poverty lines, the choice of poverty measures, and the evaluation of poverty in time and space. Since poverty is a multidimensional concept, it is necessary for practical purposes to define it in simple terms. A household is said to be poor when a predetermined and well-defined level of welfare is not attained in a given situation or country. In the literature, that level is known as the 'poverty line or threshold'. Many sociologists have argued that it is inadequate to define poverty from a threshold perspective in that this approach does not take into account the basic dimensions of poverty; this implies that the impact of the social environment and discrimination across classes are not considered.

Even if we accept the restrictive assumption that a level of income or expenditure may be used to measure poverty, the determination of this level or threshold has, up to now, remained vague. The main purpose of this chapter is to outline a poverty profile from poverty lines for Cameroon based on a solid theoretical foundation. We adopt Ravallion's (1992, 1994) approach, which consists of drawing poverty lines in accordance with the two standard measures, which show uniformity and

specificity in defining the characteristic features of the poor. We go on to present the theoretical and methodological framework of the study, then give the empirical results and description of poverty in terms of expenditures, and conclude by offering our policy recommendations.

The Poverty Profile

It is quite difficult to obtain a definition of poverty that is easily defensible from the theoretical and empirical point of view. We obtain information from the household survey in order to identify, first, a welfare index (a measure of living standards); second, a poverty line, that is, the value of that welfare measure that separates the poor from those who are not; and, third, an index that can capture the different dimensions of poverty.

Welfare Indicators

The first basic question we must ask before starting a study on poverty is that of knowing those individuals whose living standards we want to investigate. If we have at our disposal a survey with specific objectives, we can measure either the living standards of households, or those of individuals and the distribution of resources within the household. In effect, data collection at the individual level requires considerably more resources. In addition, many goods and services consumed by households cannot easily be attributed to individual members of the household. Moreover, some goods are of a public nature. In accordance with the aims of a microeconomic survey, standards of living are usually measured at the household level, such as in the case of the 1996 ECAM Survey that we use here.

In practical terms, preference is given to monetary measures based on expenditures or income. Given that several aspects of welfare may be expressed in monetary terms, monetary measures are relatively complete as to the number of goods and services covered by a typical household survey. One other advantage of these measures is that they are continuous one-dimensional variables, which help classify households in terms of welfare. However, these measures also have deficiencies owing to the fact that some aspects of welfare (e.g. the fulfilment of certain basic needs such as access to education and health services, and freedom of individual) cannot be easily measured in monetary terms.

Several variables, especially total income and total expenditures, can be used in measuring welfare in monetary terms. The use of a welfare measure based on expenditures is supported with two arguments: at the conceptual level, the theory of permanent income allows one to argue that expenditures are a better proxy of long-term income, hence of long-term living standards, than current income; and at the empirical level, it can be shown that expenditures are measured with greater precision than incomes, particularly when a significant share of income originates from the informal sector. We can mention that in the case of ECAM 96 only 10 per cent of the households surveyed were able to state the sources of their incomes, which excludes income as a welfare indicator in that study.

In welfare measurement studies, two other monetary measures may be used in addition to that mentioned above; these are food expenditures, and the share of total expenditures on food. The main reason why we use food expenditures as a welfare measure is their practicality. Non-food expenditures are very difficult to measure as compared to food expenditures, and this is the underlying reason why some surveys only collect food expenditure data. The main disadvantage is that the differences in non-food expenditures between households are not taken into account, whereas, in general, these differences may not be proportional to food expenditures.

The use of shares in total expenditures is basically supported by Engel's law, which holds that the proportion of expenditures on food drops as total expenditures or income rise. Its major deficiency is that this measure rests on the validity of Engel's law. Generally speaking, the use of total household expenditures is favoured as a basic indicator for measuring the standard of living. But its use requires methodological precautions. In effect, two corrections must be made in order to take differences in household needs into account.

In general, different households face different price vectors owing to their being located in different regions, or because they were surveyed at different periods of time. In this context, it is necessary to construct a price index that takes into account both temporal and spatial changes in prices. Such a price index allows the expression of household expenditures in constant terms relative to a region and a given baseline period.

Moreover, households differ in size and composition. These differences may be taken into consideration by dividing total household expenditures by a measure of their size. To do this easily, it is sufficient to use the number of household in the denominator to compute per capita total expenditures. The deficiency in this approach is that it does not consider the fact that some members of a household have fewer needs than others. One solution is to calculate a measure of household size in terms of adult-equivalent, in which case an adult-equivalent scale is used to weigh each household member on the basis of age and sex (Deaton and Muellbauer 1980). This approach is used in the context of the present study.

The Poverty Line

Once a welfare indicator is chosen, a poverty line separating the poor from the non-poor must be determined, and it is used in connection with welfare indicators. There are two major approaches for constructing a poverty threshold: the absolute approach and the relative approach. The relative poverty line is entirely determined by the distribution of expenditures from which it is calculated. One must decide on an arbitrary and preselected percentage of the population that incurs these expenditures. To study poverty in Ghana, for example, Boateng et al. (1989) use another method, which consists of establishing a poverty threshold as an arbitrary and preselected proportion of average expenditures. A poverty threshold established on the basis of the relative approach may therefore comprise several possible values, and may not, under these conditions, provide a set of consistent comparisons likely to help measure poverty.

The absolute poverty line is often based on a minimum of nutritional requirements that must be satisfied, and which is translated into a minimum of food expenditures to which are added a basket of non-food goods, which are judged as constituting a basic minimum. A poverty threshold established on the basis of the absolute approach has a fixed value. This approach is widely accepted, easy to grasp and requires a classification and presentation of households according to their level of income and consumption.

The conventional approach, which does not define the poverty line in terms of welfare theory, provides several methods for constructing poverty thresholds. Despite the cumbersome diversity of the definitions of these thresholds, we shall use the Ravallion approach in this chapter to determine our poverty lines. This approach consists of evaluating the level of expenditures below which an individual is considered as being poor, and in this context expenditures cover both food and non-food items. In his two-steps procedure, Ravallion starts by constructing a food poverty line, and then proceeds to determine the allocation of non-food items to arrive at the definition of an actual poverty threshold.

A food poverty threshold (ZA) is usually defined in terms of a basket of foodstuffs able to provide a calorie intake equivalent to standards recommended by nutritionists to ensure the mobility of an individual (in the case of Cameroon, calorie requirements recommended by the FAO are equivalent to 24 000 Kcal/per adult/per day). The non-food component (ZNA) has been defined in two different ways, to yield two thresholds: a lower bound threshold (ZL) and an upper bound threshold (ZU). These two bounds delineate an interval in which lies a justifiable poverty threshold. Constructing an interval for poverty thresholds instead of just a single poverty line allows us to devise a sensitivity analysis, and to design dominance tests to compare different distributions of poverty. Finally, the aggregate poverty threshold is equal to the sum of the food and non-food thresholds. The ECAM 1996 Survey provides us, at the national level, with a lower bound poverty line $ZL = 373,6$ CFAF per adult-equivalent per day, and an upper bound poverty line $ZU = 533,87$ CFAF per adult-equivalent per day, which will be used later to outline a poverty profile for Cameroon.

Poverty Indicators

A distinction must be made between qualitative and quantitative measures of poverty. Qualitative approaches do not measure poverty in numerical terms. They attempt to summarize the main characteristics of poverty identified on the basis of sociological or anthropological surveys (interviews, discussion groups) held in a formal or informal way with households or communities. Quantitative measures, on the other hand, use microeconomic data resulting from household surveys. A vast literature exists on poverty measures, and each measure highlights different aspects and conditions of poverty (Ravallion 1992; Foster 1984; Kanbur 1982; Sen 1976). But the poverty indicator must summarize information on the incidence and extent of poverty, in addition to satisfying some of its basic properties. Sen (1976) has proposed two axioms that a poverty index must satisfy. These concern the axioms

of monotonicity and of income transfer. The monotonicity axiom says that, all things being equal, a reduction in the income of an individual who is below the poverty line must cause the poverty indicator to rise. The income transfer axiom, on the other hand, shows that, *ceteris paribus*, an income transfer from a person who is below the poverty line to any other individual enjoying a higher standard of living must cause a rise in the poverty indicator.

There exist different measures of poverty. The one retained for this study belongs to the P_α class of poverty measures developed by Foster, Greer and Thorbecke (1984). Their general formula is given by the following expression:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - y_i}{Z} \right)^\alpha \quad (1)$$

where:

- n = number of individuals in the population
- q = number of poor individuals
- z = poverty threshold
- y_i = expenditure per head of individual i
- α = poverty weighting parameter.

Equation (1) is the Foster–Greer–Thorbecke (FGT) index, which takes values of 0, 1, 2 in the analysis of poverty. (i) The quantity between parentheses simply measures the proportional distance of the average poor from the poverty line, and it is raised to power α :

when $\alpha = 0$, the index becomes $P_0 = \frac{q}{n}$ (2)

This index shows the proportion of the population below the poverty line, and is the poverty ratio (the headcount ratio) defined as the number of poor persons expressed as a percentage of the total population. (ii) Despite the fact that P_0 is the most used poverty indicator, it does not capture the depth and extent of poverty, and does not satisfy Sen's two axioms. To remedy this, we must also evaluate the extent to which expenditures by the poor are far from the poverty line. This indicator is commonly known as the 'income gap ratio', and it measures the difference between the average income of the poor and the poverty line as a fraction of the poverty line. If we multiply the poverty ratio by the income gap ratio, we get another index, P_1 , which takes simultaneously into account the number of the poor and the extent of poverty:

$$P_1 = \frac{q}{n} \left(\frac{Z - \bar{y}_i}{Z} \right) \quad (3)$$

Hence equation (3) reflects both the incidence and extent of poverty. This measure possesses a particular explanatory power, allowing the estimation of the minimum amount of resources necessary to eradicate poverty. (iii) In spite of the fact that P_1 takes the number of the poor and the depth of poverty into account, it is not

sensitive to the distribution of income among the poor. If there is an income transfer from a poor individual to one who is less poor, while both individuals always remain under the poverty line, the value of P_1 is not affected. In other words, P_1 does not satisfy Sen's income transfer axiom. But if $a = 2$, the indicator becomes:

$$P_a = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - y_i}{Z} \right)^2 = \frac{1}{n} \sum_{i=1}^q \left(1 - \frac{y_i}{Z} \right)^2 \quad (4)$$

Equation (4) consequently shows the severity of poverty. (iv) Unlike other poverty measures, the P_a indicator has the advantage that it can be decomposed into sub-groups. For instance, a poverty measure at the national level may be expressed as a combination of regional poverty measurements weighted by the share of the population of each region. This can be expressed by the following equation:

$$P_a = \sum_{j=1}^m k_j P_{aj} \quad (5)$$

where: $j = 1, 2, \dots, m$ regions

k_j = share of region j population in total population ($k_1 + k_2 + \dots + k_m = 1$)

P_{aj} = poverty in region j .

This formula helps to calculate the contribution C_j of each region to poverty at the national level:

$$C_j = \frac{k_j P_{aj}}{P_a} \quad (6)$$

If k_j and C_j are compared, one may easily identify the groups disproportionately affected by poverty (measured in terms of P_a), as well as those groups that are less so. In other words, such a breakdown of national poverty into regions or socio-economic groups enables us to locate the pockets of poverty throughout the country. This is also very useful for targeting with precision. With the presentation of P_a ($a = 0, 1$, and 2) in various tables in the next section, we are able to illustrate how this indicator is decomposed in Cameroon.

A Poverty Profile for Cameroon

Regional Poverty in Cameroon

Tables 8.1 and 8.2 show the P_a poverty indicator values for Cameroon as whole, and for the three urban, semi-urban and rural areas, according to the lower and upper poverty lines calculated by using the basic needs costs (BNC) method.

Cameroon's P_a poverty indices obtained according to lower and upper poverty lines are 0.4393 and 0.6796, respectively. These values indicate that about 43.93 per cent of the Cameroon population live below the lower poverty lines ($ZL = 375.25$ CFAF per day and per adult-equivalent), while 67.97 per cent live under the upper poverty line ($ZU = 533.87$ CFAF per day per adult-equivalent).

Table 8.1: Structure of Poverty by Area in 1996 (lower national poverty line BNC, ZL = 378,25 CFAF of total expenditures per adult-equivalent per day)

Strata	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Urban	29.44 (1.49)	0.1703 (1.93)	0.0466 (0.65)	0.0183 (0.31)	11.41 (1.49)	10.07 (1.57)	9.40 (1.78)
Semi-urban	5.17 (0.57)	0.3699 (5.4)	0.0900 (1.82)	0.0346 (0.90)	4.36 (0.84)	3.41 (0.82)	3.13 (0.91)
Rural	65.37 (1.63)	0.5660 (2.78)	0.1805 (1.17)	0.0767 (0.67)	84.21 (1.76)	86.51 (1.81)	87.46 (2.05)
Cameroon	100.00	0.4393 (2.06)	0.164	0.0573 (0.46)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

The lower bound poverty line (ZL) and the P_0 index in Table 8.1 show that 17.03 per cent of the urban population, 36.99 per cent of the semi-urban population, and 56.60 per cent of the rural population live below that poverty line. The rural population contributes to up to 84.21 per cent of national poverty, while the shares of both semi-urban and urban populations amount only to 4.36 and 11.41 per cent, respectively.

Table 8.2: Structure of Poverty by Zones in 1996 (upper national poverty line ZU = 583,87 CFAF of total expenditures per adult-equivalent per day)

Strata	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Urban	29.44 (1.49)	0.3675 (2.42)	0.1162 (0.99)	0.0183 (0.31)	15.92 (1.43)	12.72 (1.38)	9.40 (0.17)
Semi-Urban	5.17 (5.23)	0.6032 (2.46)	0.2096 (0.90)	0.0346 (0.69)	4.59 (0.69)	4.03 (0.91)	3.13 (0.57)
Rural	65.37 (1.63)	0.8265 (1.87)	0.3426 (1.28)	0.0767 (0.67)	79.48 (1.62)	83.23 (1.59)	87.46 (2.05)
Cameroon	100.00	0.6797 (1.64)	0.2690 (0.98)	0.0573 (0.46)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Considering the P_0 index calculated with the upper poverty line (ZU = 533.87 CFAF per adult-equivalent per day), Table 8.2 indicates that 82.65 per cent of the rural population, 60.30 per cent of the semi-urban population and 36.75 per cent

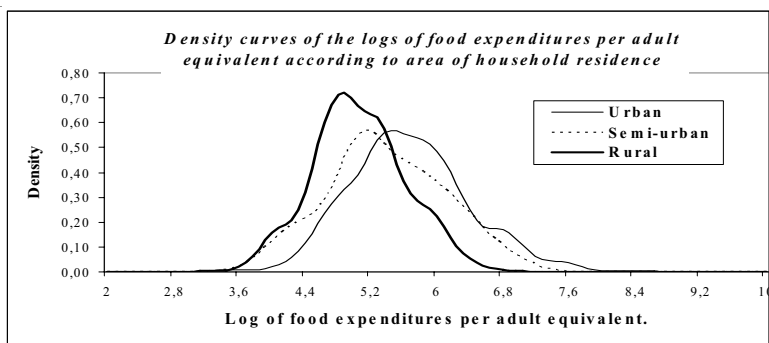
of the urban population live below the upper poverty line. According to this poverty line, rural, semi-urban and urban populations contribute 79.48, 4.59 and 15.92, respectively, to national poverty. The P_1 and P_2 indices are usually computed to facilitate the determination of the minimum needs required to eliminate poverty in a country, and to analyse its depth.

Let us now consider the P_2 values in Tables 8.1 and 8.2. They show that the values of this index are 0.0767 and 0.0767 respectively for the rural area according to the lower and upper poverty lines. The corresponding values of P_2 for the semi-urban zone are 0.346 and 0.436 respectively; and for the urban area they are respectively 0.0183 and 0.0183. These figures indicate that poverty is more severe in rural than in urban areas. In terms of contribution to national poverty, and according to P_2 values, we note that the share contributions of the rural area are 87.46 and 87.46 per cent, respectively, for both lower and upper poverty lines. The corresponding values for the semi-urban zone are 3.13 per cent.

The great depth of rural poverty is highlighted in these tables by the increasing trend in the contribution of the rural area to national poverty according to the lower and upper poverty lines, when alpha rises from 0 to 2 (that is, from P_0 to P_2). With the lower poverty line, Table 8.1 also indicates growth in the rural area's contribution to national poverty (from 84.21 to 87.46 per cent). In contrast, the share contribution of other areas to national poverty according to lower and upper poverty declines as alpha increases from 0 to 2.

The importance of rural poverty relative to that of other areas may also be underscored by comparing the density functions (curves) of the logs of total expenditures per adult equivalent according to household areas of residence (Fig. 8.1).

Fig. 8.1: Density Curves of Logs of Food Expenditures per Adult-equivalent According to Household Areas of Residence



Source: author's calculations.

It is important to note that a useful procedure for representing a variable of interest such as total expenditures is the estimation of its density function. Following Silverman (1986), density functions are estimated by using the Gaussian Kernel method. The integral of the area below the curve sums up to 1. Observations can be made on density curves according to whether the area of residence is urban, semi-urban or rural.

The log distribution of total expenditures shows approximate the normal distribution. The three curves on Fig. 8.1 (urban, semi-urban and rural) all approximate the shape of the normal distribution. In a normal distribution, equidistant distributions from the mode have the same frequency. This is also verified when the form of the density function is symmetrical. Since the standard of living depends on total expenditures per adult-equivalent in the household, it follows that the higher the expenditure, the higher the standard of living.

It follows from comparing the above three curves that the density curve of the urban area is located more to the right of that of the rural area. This implies, among other things, that for a low standard of living, it is the rural area's curve that indicates high frequencies at that level. On the other hand, frequencies are relatively higher when the standard of living is high in the urban area. It can be said that the more the curve is drawn to the right (with higher total expenditures per adult-equivalents), the higher the standard of living.

The semi-urban area's density curve is located between the two other curves, which shows that its standard of living lies between the rural and the urban zones. The vertical line indicates the log of the aggregate poverty threshold. The area between the density curve and the poverty line is equal to the numerical poverty index P_0 . Comparisons of the three areas under the curves confirm that the numerical index of the rural zone is higher than those of the other two zones.

Poverty Profile by Strata

Tables 8.3 and 8.4 provide information on poverty indicators when the poverty profile is analysed according to strata.

According to Table 8.3, the P_0 values computed by using the lower poverty line (ZL = 373.25 CFAF as total expenditures per day per adult-equivalent), show that 58.79 per cent of the households in the High Plateaux, 57.79 per cent of the households in the Forest region and 49 per cent of those in the Savannah, 19.24 per cent of those in Yaoundé, 16.56 per cent of those in Douala, and 16.16 per cent of those households residing in 'Other cities' live below the lower poverty threshold computed according to the basic needs costs (BNC) method.

In terms of share contributions to national poverty, the High Plateaux have a share of 37.20 per cent followed by the Savannah (27.06 per cent), the Forest region 24.31 per cent, Other cities (4.67 per cent), Douala (3.63 per cent) and Yaoundé (3.10 per cent).

Table 8.3: Structure of Poverty According to Strata in 1996 (national lower poverty line, BNC; ZL = 373,26 CFAF of total expenditures per adult-equivalent per day)

Strata	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Yaoundé	7.1	0.1924 (0.008)	0.0410 (0.003)	0.0120 (0.007)	3.10 (0.005)	2.13 (0.004)	1.50 (0.040)
Douala	9.6	0.1656 (0.034)	0.0612 (0.014)	0.0269 (0.006)	3.63 (0.008)	4.33 (0.011)	4.54 (0.012)
Other Cities	12.7	0.1616 (0.028)	0.0387 (0.009)	0.0152 (0.005)	4.67 (0.008)	3.60 (0.009)	3.37 (0.011)
Rural (Forest)	18.5	0.5779 (0.039)	0.1845 (0.017)	0.0755 (0.009)	24.31 (0.025)	25.00 (0.030)	24.32 (0.035)
Rural (High Plateaux)	27.8	0.5879 (0.044)	0.1719 (0.018)	0.0700 (0.010)	37.20 (0.036)	35.03 (0.039)	33.94 (0.047)
Rural (Savannah)	24.2	0.4900 (0.045)	0.1681 (0.020)	0.076 (0.011)	27.06 (0.030)	29.89 (0.036)	32.32 (0.045)
Cameroon	100,00	0.4393 (0.020)	0.1364 (0.00)	0.0573 (0.004)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Table 8.4: Structure of Poverty by Strata in 1996 (national upper poverty line BNC; ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)

Strata	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Yaoundé	7.1	0.4161 (0.043)	0.1282 (0.017)	0.0504 (0.007)	4.34 (0.006)	3.37 (0.006)	2.66 (0.005)
Douala	9.6	0.3343 (0.019)	0.1191 (0.018)	0.0591 (0.008)	4.74 (0.008)	4.27 (0.009)	4.25 (0.042)
Other Cities	12.7	0.3655 (0.038)	0.1075 (0.015)	0.0450 (0.008)	6.83 (0.009)	5.07 (0.008)	4.26 (0.008)
Rural (Forest)	18.5	0.8382 (0.024)	0.3488 (0.018)	0.1764 (0.013)	22.79 (0.019)	23.96 (0.023)	24.31 (0.026)
Rural (High Plateaux)	27.8	0.8116 (0.030)	0.3378 (0.019)	0.1687 (0.014)	33.19 (0.027)	34.90 (0.031)	34.96 (0.036)
Rural (Savannah)	24.2	0.7869 (0.034)	0.3149 (0.023)	0.1633 (0.016)	28.09 (0.024)	28.40 (0.027)	29.54 (0.033)
Cameroon	100	0.6797 (0.016)	0.2690 (0.009)	0.1341 (0.007)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Table 8.4 shows that 83.82 per cent of the population in the Forest region, 81.16 per cent of the population in the High Plateaux, 78.69 per cent in the Savannah, 41.61 per cent in Yaoundé, 36.55 per cent in the Other cities, and 33.43 per cent of the population in Douala live below the upper poverty line established by following the BNC method. Given this poverty line and the P_0 values, the High Plateaux contribute a share of 33.19 per cent to national poverty, followed by the Savannah (28.09 per cent), the Forest region (22.79 per cent), the Other cities (6.83 per cent), Douala (4.74 per cent) and Yaoundé (4.34 per cent).

By considering the P_2 – values of Tables 8.3 and 8.4 and the lower and upper poverty lines, the High Plateaux stratum have P_2 – values of 0.0700 and 0.1687, respectively. The corresponding values for the Savannah stratum are 0.076 and 0.1633; those of the Forest stratum are 0.0755 and 0.1764, respectively. For urban strata, P_2 – values for Yaoundé are 0.0120 and 0.0504, respectively following the lower and upper poverty lines, P_2 – values for the Other cities 0.0152 and 0.0450, and those of Douala, 0.0269 and 0.0591, respectively. The values of this index show that whatever the poverty threshold, the severity of poverty is higher in the Forest region, followed by the strata of the High Plateaux and the Savannah, respectively; the severity of poverty is moderate in the urban strata of Douala, Other cities and Yaoundé.

In terms of share contribution to national poverty according to P_2 – values, the High Plateaux stratum has a share of 33.94 and 34.96 per cent, respectively following the lower and upper poverty lines. The corresponding shares for the Forest Region population are 24.32 and 24.31 per cent, whereas those of the Savannah stratum are 32.32 and 29.54 per cent considering the lower and upper poverty lines; Douala's share contribution to national poverty is the most significant, followed by those of Other cities and that of Yaoundé.

The highest severity of poverty in the Forest and High Plateaux regions is highlighted in Tables 8.3 and 8.4 by the positive trends in the share contributions of both of these strata to national poverty according to the upper poverty line when a increases from 0 to 2 (that is, from C_0 to C_2). In effect, when the upper poverty line is considered (as in Table 8.4), the contributions of the Forest region stratum increase from $C_0 = 22.79$ per cent to $C_2 = 24.31$ per cent; those of the High Plateaux stratum also rise from $C_0 = 33.19$ per cent to $C_2 = 34.96$ per cent. In contrast, and given the lower poverty line (see Table 8.3), we observe a decline in the share contribution of the High Plateaux stratum to national poverty while those shares are stable as far the Forest region stratum is concerned. Except for these major trends, the share contributions of the other strata are decreasing, or remain constant in the worst of cases as a increases from 0 to 2 (i.e. from C_0 to C_2).

The information in Tables 8.3 and 8.4 can be useful in devising measures and targeting the population concerned for reducing poverty. Given the above results, and the extent of poverty in Cameroon, it has become a matter of urgency to implement measures for reducing poverty. The target areas are rural areas comprising the Forest, High Plateaux and Savannah strata where more than half of the poor live.

In the following section, poverty is decomposed according to the age, and the gender of the head of the household, and the size of the household.

Poverty and the Age of the Head of the Household

The breakdown of poverty according to the age of the head of the household is given in Tables 8.5 and 8.6.

Table 8.5: Decomposition of Poverty According to Age Group of Household Head (ZL = 373.26 as total expenditures per adult-equivalent per day)

Age Group	Proportions of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Less than 35 years	18,36 (0,012)	0,2853 (0,035)	0,0873 (0,013)	0,0380 (0,007)	11,92 (0,018)	11,75 (0,020)	12,20 (0,025)
35–50 years	39,28 (0,019)	0,4062 (0,032)	0,1350 (0,013)	0,0589 (0,007)	36,32 (0,033)	38,87 (0,038)	40,40 (0,046)
More than 50 years	42,29 (0,020)	0,5365 (0,033)	0,1591 (0,013)	0,0642 (0,007)	51,65 (0,034)	49,36 (0,039)	47,38 (0,046)
Undefined	0,05 (0,000)	0,7095 (0,254)	0,0797 (0,028)	0,0089 (0,003)	0,09 (0,00)	0,03 (0,00)	0,00 (0,00)
Cameroon	100,00	0,4393 (0,020)	0,1364 (0,008)	0,0573 (0,046)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data

Table 8.6: Decomposition of Poverty According to Age Group of Head of the Household (ZU = 533.87 CFAF as total expenditures per adult-equivalent per day)

Age Group	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Less than 35 years	18,36 (0,012)	0,5484 (0,035)	0,1917 (0,017)	0,0906 (0,011)	14,81 (0,016)	13,08 (0,016)	12,40 (0,018)
35–50 years	39,28 (0,016)	0,6419 (0,011)	0,2553 (0,025)	0,1304 (0,029)	37,10 (0,034)	37,27 (0,027)	38,18 (0,019)
More than 50 years	42,29 (0,020)	0,7718 (0,023)	0,3153 (0,014)	0,1563 (0,010)	48,02 (0,027)	49,57 (0,030)	49,37 (0,035)
Undefined	0,05 (0,000)	0,7095 (0,025)	0,2692 (0,096)	0,1021 (0,036)	0,05 (0,000)	0,05 (0,000)	0,04 (0,000)
Cameroon	100,00	0,6797 (0,016)	0,2690 (0,009)	0,1341 (0,006)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data

The analysis of the data compiled in these tables underscores three main results. In general, poverty affects mainly those households whose heads are older than 50 years old, with an incidence of about 50 per cent when the lower poverty line is considered, and an incidence of about 77 per cent with the upper poverty line: (i) the share contribution of these households to national poverty is highest whatever the value of the parameter alpha (α); (ii) it is also in this class of households that poverty is the most severe (15.91 per cent with the lower poverty line, and 31.53 per cent with the upper poverty line).

In general, both Tables 8.5 and 8.6 show that the incidence and severity of poverty increase with the age of the head of the household.

Poverty and the Gender of the Head of the Household

The analysis of statistics presented in Table 8.7 shows that households headed by men have a relatively higher prevalence of poverty than households headed by women. We observe that poverty is 13.5 per cent in relative terms more among the men than among the women, with respective rates of 44.59 and 38.47 per cent; hence share contributions to poverty are relatively higher among men as heads of households (90.22 per cent). And as compared to the national average, poverty is 1.5 per cent higher among men heading households.

Table 8.7: Gender of Household Head (ZL = 373.26 CFAF as total expenditures per adult-equivalent per day)

Gender	Proportion (%)	Total Expenditures (CFAF/day)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Man	88,88 (0,0093)	559,83 (16,78)	0,4459 (0,022)	0,1393 (0,009)	0,05841 (0,005)	90,22 (0,0158)	90,79 (0,0186)	90,54 (0,023)
Woman	11,06 (0,0093)	680,09 (40,82)	0,3847 (0,044)	0,1131 (0,019)	0,0489 (0,0109)	9,68 (0,0158)	9,17 (0,0185)	9,44 (2,34)
Cameroon	100	573,08 (15,69)	0,4393 (0,020)	0,1364 (0,0089)	0,0573 (0,004)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Total expenditures of households headed by women are 21 per cent higher in relative value than those headed by men. The intensity of poverty as well as its severity are noticeably more pronounced among men than among women (5.8 per cent of poor men are severely affected by poverty against 4.9 per cent among poor women).

The analysis of information in Table 8.8 (where indicators have been calculated relative to the upper poverty line) strengthen the above results, except that with the same level of total expenditures as in the previous case, the rate of poverty is much higher. This is also valid for other indicators such as the poverty gap (P_1) and the

square of the poverty gap (P_2). On that score, the respective share contributions to national poverty are relatively higher. As to analysis according to sex, we also observe that households headed by men display the highest rates of poverty whatever the indicator considered.

Taking everything into consideration, a correlation exists between the different P_α values and total expenditures. In other words, when total expenditures are high, the rate of poverty is relatively low. However, the most basic result to note is that the use of the upper poverty line leads to relatively higher levels of poverty when both food and non-food requirements are taken into account. Finally, the idea that a feminization of poverty is taking place is not verified in the case of Cameroon whichever approach for measuring poverty is used. It must therefore be recognized that the incidence of poverty in terms of basic needs is not higher in households headed by women than in those headed by men. Women who head households are probably the victims of other forms of poverty, as for instance the burden of household chores or work in the fields.

Table 8.8: Poverty and Gender of Household Head
(ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)

Gender	Proportions (%)	Total Expen- ditures (CFAF/day)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Man	88,88 (0,0093)	559,83 (16,78)	0,6958 (0,017)	0,2758 (0,0105)	0,1372 (0,0073)	90,98 (0,0115)	91,13 (0,0138)	90,90 (0,0166)
Woman	11,06 (0,0093)	680,09 (40,82)	0,5503 (0,0236)	0,2142 (0,0159)	0,1098 (0,0138)	8,95 (0,0166)	8,80	9,05
Cameroon	100	573,08 (15,69)	0,6797 (0,0164)	0,2690 (0,0098)	0,1341 (0,0067)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Poverty Profile According to Type of Household

This profile is shown in Tables 8.9 and 8.10 where the P_α index is decomposed according to lower and upper poverty lines. Table 8.9 indicates a poverty profile according to household type by using the lower poverty lines. It emerges from this table that 3.5 per cent of households comprising only a single individual, 40.8 per cent of single-parent households, 40.09 per cent of strictly nuclear households, and 46.9 per cent broadly defined nuclear households are poor. Their share contributions to national poverty are respectively 13.00, 10.31, 21.65 and 67.84 per cent.

As to the severity of poverty, the category 'broadly nuclear household' is the most affected, with an incidence of 0.14 and a share contribution of 68.25 per cent to national poverty. This conclusion is also valid as far as the depth of poverty is concerned, as measured by.

Table 8.9: Decomposition of Poverty According to Household Type
(ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)

Household Type	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Single Person	1,66 (0,0019)	0,0352 (0,0206)	0,0149 (0,0088)	0,0064 (0,0039)	0,13 (0,0008)	0,18 (0,0011)	0,19 (0,0011)
Single Parent	11,00 (0,0097)	0,4089 (0,0459)	0,1230 (0,0200)	0,054 (0,0114)	10,311 (0,0169)	0,01 (0,0197)	10,47 (0,0248)
Strictly Nuclear	23,72 (0,0157)	0,4009 (0,036)	0,1354 (0,0161)	0,05935 (0,0088)	21,65 (0,0254)	23,54 (0,0315)	24,55 (0,0383)
Broadly Nuclear	63,48 (0,0180)	0,4699 (0,0280)	0,1424 (0,0109)	0,0585 (0,00614)	67,84 (0,0293)	66,25 (0,0351)	64,77 (0,0428)
Cameroon	100,00	0,4393 (0,0206)	0,1364 (0,0082)	0,05733 (0,0046)	0,4393 (0,0206)	0,1364 (0,0082)	0,05733 (0,0046)

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Table 8.10: Decomposition of Poverty by Household Type
(ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)

Household Type	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Single Person	1,66 (0,0019)	0,0924 (0,0310)	0,0289 (0,0128)	0,0141 (0,0075)	0,23 (0,0008)	0,18 (0,0008)	0,18 (0,0009)
Single Parent	11,00 (0,0097)	0,5918 (0,0417)	0,2342 (0,0246)	0,1202 (0,0167)	9,66 (0,0120)	9,6 (0,0146)	9,95 (0,0177)
Strictly Nuclear	23,72 (0,0157)	0,6739 (0,0315)	0,2656 (0,0188)	0,1336 (0,0131)	23,51 (0,0205)	23,41 (0,0239)	23,62 (0,0282)
Broadly Nuclear	63,48 (0,0180)	0,7130 (0,0212)	0,2828 (0,0128)	0,1400 (0,0089)	66,58 (0,02315)	66,73 (0,0268)	0,6625 (0,0315)
Cameroon	100,00	0,6797 (0,0164)	66,73 (0,0268)	0,13418 (0,0067)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

By using the upper poverty line (Table 8.10), we note, as in the previous case, that the incidence of poverty increases with the number of individuals in the household. This result also holds for the severity and depth of poverty as measured by P_1 and P_2 . Similarly, broadly defined nuclear households display at the same time the highest incidence, severity and depth of poverty, as well as the highest share contribution to national poverty. The results obtained using the lower and upper poverty lines show the same trend in both nuclear and single-person households. Therefore, the more persons the household has, the higher the P_0 , P_1 and P_2 indicators.

Household Size and Poverty

Examination of Table 8.11 brings out the poverty profile according to the number of individuals in a household, when the lower and upper poverty lines are used. It is evident from this table that the incidence of poverty P_0 increases from single-person households to households with eight persons. Single-person households account for 30.18 per cent of the poor, and contribute weakly to total poverty, whereas the other extreme (households with eight persons) account for 89.8 per cent of the poor, and contributes 58.98 per cent to national poverty. Secondly, we note that the depth of poverty (P_1) increases greatly from single-individual households (0.092) to household with eight persons (0.5319).

Table 8.11: Decomposition of the FGT Index According to Number of Persons in a Household
(ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)

Number of Persons in a Household	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
1 Person	1,70 (0,0019)	0,3018 (0,0516)	0,0920 (0,0193)	0,0391 (0,0115)	0,61 (0,0013)	0,35 (0,0008)	0,24 (0,0008)
2 Persons	3,18 (0,0036)	0,5509 (0,0542)	0,2222 (0,0279)	0,1123 (0,0176)	2,10 (0,0040)	1,60 (0,0030)	1,27 (0,0030)
3-4 Persons	12,23 (0,0091)	0,7315 (0,0287)	0,31260 (0,0187)	0,1684 (0,0138)	10,75 (0,0097)	8,50 (0,0089)	7,36 (0,0089)
5-7 Persons	28,25 (0,0159)	0,8116 (0,0208)	0,3969 (0,0159)	0,2337 (0,0128)	27,53 (0,0179)	24,93 (0,0187)	23,57 (0,020)
8 Persons and more	54,64 (0,0192)	0,8988 (0,0174)	0,5319 (0,0147)	0,3462 (0,0132)	58,98 (0,0209)	64,63 (0,0217)	67,55 (0,0230)
Cameroon	100	0,8325 (0,0122)	0,4497 (0,0103)	0,2800 (0,0089)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated from ECAM 1996 Survey data by the authors.

The severity level of poverty (P_2) follows the same trend, rising from 0.039 for single-person households to 0.346 for households with eight persons. The standard deviations of all these P-values are low. Examination of figures in Table 8.12 shows the same trends as those of Table 8.11. The larger is the size of household, the higher the incidence of poverty (P_0), its depth (P_1) and severity (P_2).

After analysing poverty according to household type by region and according to standard of living, it is important to dwell on the number of children in poor families.

Table 8.13 confirms the common saying that 'the poor man's bed is fertile'. In effect, in all the regions considered, the number of children per household is higher among the poor than the non-poor. It is in the rural High Plateaux region that the number of children per household is the highest, both among the poor (4.91) and

the non-poor (2.65). At the national level in Cameroon, the number of children per household is highest among the poor (3.89) than among the non-poor (2.07).

Table 8.12: Decomposition of the FGT Index According to Number of Persons in a Household (ZU = 533,82 CFAF of total expenditures per adult-equivalent per day)

Number of Persons in a Household	Proportion of Population (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
1 Person	1,70 (0,0019)	0,5063 (0,0554)	0,1875 (0,0263)	0,0919 (0,0168)	0,92 (0,0015)	0,54 (0,0010)	0,39 (0,0008)
2 Persons	3,18 (0,0036)	0,7366 (0,0468)	0,3462 (0,0319)	0,2030 (0,0235)	1,88 (0,0030)	1,88 (0,0030)	1,60 (0,0030)
3-4 Persons	12,23 (0,0091)	0,8896 (0,0168)	0,4707 (0,0166)	0,2874 (0,0154)	11,72 (0,0094)	9,87 (0,0090)	8,67 (0,0088)
5-7 Persons	28,25 (0,0159)	0,9108 (0,0139)	0,53805 (0,0144)	0,3585 (0,0137)	27,70 (0,0137)	26,065 (0,0176)	24,95 (0,0185)
8 Persons and more	54,64 (0,0192)	0,9712 (0,0085)	0,6577 (0,0121)	0,4779 (0,0131)	57,12 (0,0199)	61,62 (0,0207)	64,40 (0,0215)
Cameroon	100	0,9288 (0,0069)	0,5831 (0,00890)	0,4055 (0,0091)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated from ECAM 1996 Survey data by the authors.

Table 8.13: Number of Children per Household, by Region and According to Standard of Living

Strata analysed	The Poor	The Non-Poor	Total
Yaoundé	3.55	1.63	2.62
Douala	3.68	1.68	2.64
Other Cities	3.72	1.94	2.82
Rural Forest	4.05	1.84	3.31
Rural High Plateaux	4.91	2.65	3.65
Rural Savannah	3.13	2.03	2.78
Cameroon	3.89	2.07	

Source: calculated by the authors from ECAM 1996 Survey data.

These results are important. They show that if these trends persist for a relatively longer period, inequalities in terms of poverty could increase, or at least persist. The number of children per non-poor household is lower, especially in urban areas. There is a greater likelihood that these children are better educated, better fed and in better health. Secondly, the virtuous circle effect applies – fewer children per household implies more chances that they would not be in poverty. Poverty generates a vicious circle among the poor where poverty could lead to more poverty for generations. Poor households are not able to educate their children, since they are

numerous (they face difficulties in providing them with schooling, health care, food etc.). Therefore, the children of the poor are more unlikely to escape poverty.

Poverty Profile According to Socio-Economic Group

The regional dimension of poverty is an essential element of general policy. One must also recognize numerous aspects of economic policy, particularly in the context of social or economic policy, taking into consideration the structure of employment and the economy.

To identify households whose sources of income are linked to occupation is not necessarily the same thing as identifying the regions from which they come. It is for this reason that we define socio-economic groups in relation to the economic activity of the head of the household, and we use the P_a indicator to estimate poverty among groups in Cameroon, as well as their share contributions to national poverty. We have distinguished five socio-economic groups in order to carry out an in-depth analysis of poverty as shown in Tables 8.14 and 8.15.

Table 8.14: Decomposition of Food Poverty According to the Main Occupation of Household Head in the Last 12 Months
(ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)

Occupation of the Household Head	Proportions (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Independent with Employees	5,70 (0,008)	0,3612 (0,078)	0,0939 (0,025)	0,0391 (0,014)	4,69 (0,013)	3,93 (0,012)	3,90 (0,015)
Independent without Employees	57,27 (0,019)	0,5658 (0,098)	0,1810 (0,0121)	0,0778 (0,007)	73,76 (0,027)	75,98 (0,028)	77,80 (0,031)
Unskilled Worker	5,85 (0,007)	0,2497 (0,062)	0,0729 (0,022)	0,0270 (0,0010)	3,33 (0,009)	3,13 (0,011)	2,76 (0,011)
Manager or Skilled Worker	14,07 (0,012)	0,1642 (0,043)	0,0463 (0,014)	0,0188 (0,006)	2,42 (0,006)	2,20 (0,007)	2,13 (0,007)
Merchants	6,50 (0,009)	0,1945 (0,044)	0,0436 (0,011)	0,0128 (0,003)	6,23 (0,016)	4,50 (0,013)	3,15 (0,013)
Other Occupation	2,86 (0,05)	0,3383 (0,092)	0,1172 (0,034)	0,0522 (0,017)	2,20 (0,007)	2,45 (0,008)	2,60 (0,010)
Undefined	7,71 (0,007)	0,4180 (0,052)	0,1375 (0,025)	0,0567 (0,011)	7,34 (0,013)	7,77 (0,016)	7,63 (0,019)
Cameroon	100,00	0,4393	0,1364	0,0573	(0,020)	(0,008)	(0,004)
	100,00	100,00	100,00				

Note: figures in parentheses represent standard deviations.

Source: calculated from ECAM 1996 Survey data by the authors.

It emerges from Table 8.14 that 57.27 per cent of the heads of households interviewed are independent workers working alone. When household heads are classified according to occupation, the above category of households displays the highest proportion of poor people. In effect, this household category contributes a share of more than 73.7 per cent to national poverty, with an incidence of poverty reaching 56.8 per cent.

Table 8.15: Decomposition of Food Poverty According to Occupation of Household Head in the Last 12 Months (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)

Occupation of the Household Head	Proportions (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Independent with Employees	5,70 (0,008)	0,6124 (0,070)	0,1999 (0,035)	0,0956 (0,022)	5,14 (0,010)	4,24 (0,010)	4,06 (0,011)
Independent without Employees	57,27 (0,019)	0,8215 (0,018)	0,1708 (0,031)	0,0774 (0,018)	69,22 (0,022)	73,30 (0,023)	75,11 (0,025)
Unskilled Worker	5,85 (0,007)	0,4668 (0,065)	0,1708 (0,031)	0,074 (0,018)	4,02 (0,008)	3,71 (0,009)	3,38 (0,009)
Manager or Skilled Worker	14,07 (0,012)	0,5391 (0,071)	0,1329 (0,022)	0,0533 (0,012)	5,15 (0,011)	3,21 (0,007)	2,58 (0,006)
Merchants	6,50 (0,009)	0,3499 (0,046)	0,1139 (0,019)	0,0471 (0,009)	2,36 (0,006)	2,28 (0,007)	2,40 (0,007)
Other	2,86 (0,05)	0,5625 (0,085)	0,2148 (0,046)	0,1126 (0,028)	2,36 (0,006)	2,28 (0,007)	2,40 (0,007)
Occupation Undefined	7,71 (0,007)	0,6025 (0,047)	0,2536 (0,027)	0,1304 (0,018)	6,84 (0,009)	7,27 (0,012)	7,50 (0,010)
Cameroon	100,00	0,6797 (0,016)	0,2690 (0,009)	0,1341 (0,006)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated from ECAM 1996 Survey data by the authors.

The four categories identified (independent with employees, unskilled worker, merchant manager or skilled worker) represent about 29.12 per cent of the household heads in the sample, and contribute only 16.67 per cent to national poverty. The share contribution to national poverty of independent household heads without employees remains high and increases with the alpha parameter. The same conclusion is drawn when the upper poverty line is used (Table 8.15).

Poverty Profile According to Sector of Activity

Tables 8.16 and 8.17 give the decomposition of poverty according to the household's sector of activity. Examination of the data presented in these tables shows that poverty in Cameroon actually affects informal sector households the most.

In effect, poverty understood in terms of the lower poverty line (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day) confirms the fact that the modern sector of the economy accounts for less of the poor people (Table 8.16) – that is, only 19.18 per cent against a national average of 43.93 per cent. On the other hand, the informal sector accounts for 5 per cent of the poor in Cameroon. The same trends are observed when the severity of poverty is analysed. Nearly 7 per cent of individuals in the informal sector are severely stricken by poverty against only 1.3 per cent in the formal sector. The share contribution of the informal sector to national poverty is 79 per cent on the average whatever the level of poverty.

Table 8.16: Sector of Activity and Poverty (ZL = 373.26 CFAF of total expenditures per adult-equivalent per day)

Sector	Proportion (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Formal	20,80 (0,014)	0,1918 (0,035)	0,0449 (0,0095)	0,0135 (0,0033)	8,85 (0,018)	6,67 (0,015)	4,78 (0,0131)
Informal	67,23 (0,017)	0,5132 (0,026)	0,1614 (0,0111)	0,0693 (0,0063)	78,55 (0,0255)	79,54 (0,026)	81,27 (0,029)
Other	12,48 (0,010)	0,4431 (0,044)	15,05	0,064 (0,0099)	12,59 (0,018)	13,77 (0,022)	0,1394 (0,026)
Cameroon	100	0,4393 (0,020)	13,64 (0,008)	0,0573 (0,0046)	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Following the profile outlined with the upper poverty line (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day), and whatever the sector of activity considered, poverty obtained with the upper poverty line is higher than that obtained with the lower threshold, but 39.2 per cent of the household heads in the formal sector are considered as poor against 77 per cent in the informal sector. Apart from the informal sector poverty and the intensity of poverty are higher at the national level.

Table 8.17: Sector of Activity and Poverty (ZU = 533.87 CFAF of total expenditures per adult-equivalent per day)

Sector	Proportion (in %)	P_0	P_1	P_2	C_0 (in %)	C_1 (in %)	C_2 (in %)
Formal	20,80 (0,014)	0,3920 (0,039)	0,1229 (0,016)	0,0499 (0,008)	11,69 (0,016)	9,26 (0,015)	74,41 (0,014)
Informal	67,23 (0,017)	0,7744 (0,018)	0,3132 (0,012)	0,1582 (0,008)	76,60 (0,0203)	78,26 (0,022)	79,31 (0,0241)
Other	12,48 (0,010)	0,6374 (0,0391)	0,2687 (0,023)	0,1412 (0,015)	11,70 (0,013)	12,46 (0,016)	11,13 (0,019)
Cameroon	100 (0,0164)	0,6797 (0,0098)	0,2690 (0,0067)	0,1341	100	100	100

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Basic Needs and Poverty

In the preceding paragraphs, we have captured poverty through expenditures per adult-equivalent in households. Now, we examine dimensions of poverty that were not taken into account by the previous indicator, such as education, health and housing, which constitute the various basic needs highlighted in recent years. Moreover, it is generally accepted that the accumulation of human capital constitutes a means for increasing individuals' welfare, and thus the likelihood of their escaping from

poverty. In using ECAM 96 we are also interested in this aspect of the problem; hence with information on education and health we examine the non-monetary aspects of standards of living in Cameroon in 1996.

Education and Poverty

In general, education is often considered as an essential component of any strategy for equitable growth. Even if the relationship between the level of education and that of welfare is complex, education is generally considered as an important factor in the fight against poverty (Berman 1993). We have at our disposal data on expenditures on education and the level of education of the household head for establishing a link between education and poverty in Cameroon. Expenditures on education seem to constitute a strong constraint on schooling. The data in Table 8.18 below show that the poor spend less on education than the non-poor.

In effect, the average expenditures incurred by households on education vary considerably with standard of living, from 10,561 CFAF for poor households to 18,135 CFAF for non-poor households at the national level. At the regional level, there exist wide disparities between these expenditures, with Yaoundé and Douala spending more than other regions on education. After these two large cities, the rest are in descending order on education expenditures. The gaps are so wide that the poor households of Yaoundé and Douala spend more than the non-poor households in the rural strata, especially in the Savannah region; the poor spend very little on education. In the Forest zone, on the other hand, the poor spent more on education than the non-poor.

Table 8.18: Average Expenditures on Education by Region and According to Standard of Living per Adult-equivalent(in CFAF)

Region	Poor	Non-Poor	Total
Yaoundé	17,328	26,037	21,523
Douala	18,097	26,566	22,476
Other Cities	9,993	17,558	13,829
Rural Forest	6,279	5,660	6,072
Rural High Plateaux	4,627	9,815	7,531
Rural Savannah	783	1,793	1,100
Cameroon	10,561	18,135	14,089

Source: calculated by the authors from ECAM 1996 Survey data.

Tables 8.19 and 8.20 provide information on the level of education of the household head and according to lower and upper poverty lines. Following decomposition with lower and upper poverty lines, the figures in Tables 8.19 and 8.20 show that the incidence of poverty is very weak in households where the head has received higher education. From these tables the incidence of poverty is below the national average for those who have a level of education corresponding to technical training, secondary education, and higher education. The share contribution of these categories to national poverty is low relative to the national average.

Table 8.19: Decomposition of Food Poverty According to Level of Education (ZL = 373.26 CFAF)

Education of Household Head	Proportion	P ₀	P ₁	P ₂	C ₀ (in %)	C ₁ (in %)	C ₂ (in %)
Primary	35,04 (0,033)	0,4709 (0,038)	0,1399 (0,013)	0,0581 (0,007)	37,56 (0,003)	35,95 (0,026)	35,53 (0,0434)
Technical Training	7,11 (0,008)	0,1928 (0,054)	0,0668 (0,019)	0,0256 (0,007)	3,12 (0,010)	3,48 (0,011)	3,18 (0,011)
Secondary 1st Cycle	10,70 (0,010)	0,3866 (0,055)	0,1247 (0,022)	0,0484 (0,010)	9,49 (0,019)	9,78 (0,022)	9,05 (0,023)
Secondary 2nd Cycle	5,73 (0,006)	0,1771 (0,053)	0,0434 (0,016)	0,0157 (0,007)	2,31 (0,007)	1,82 (0,007)	1,57 (0,008)
Higher Education	4,73 (0,005)	0,0100 (0,006)	0,0031 (0,002)	0,0016 (0,001)	0,10 (0,000)	0,11 (0,000)	0,13 (0,001)
Others	36,37 (0,020)	0,5686 (0,037)	0,1817 (0,016)	0,0784 (0,009)	47,47 (0,025)	48,84 (0,039)	50,52 (0,046)
Cameroon	100,00	0,4393 (0,020)	0,1364 (0,008)	0,0573 (0,004)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

Table 8.20: Decomposition of Food (Nutritional) Poverty According to Level of Education (ZU = 533.87 CFAF)

Education of Household Head	Proportion	P ₀	P ₁	P ₂	C ₀ (in %)	C ₁ (in %)	C ₂ (in %)
Primary	35,04 (0,033)	0,7513 (0,025)	0,2884 (0,015)	0,1408 (0,010)	38,73 (0,025)	37,56 (0,029)	36,78 (0,033)
Technical Training	7,11 (0,008)	3557 (0,059)	0,1303 (0,029)	0,0630 (0,016)	3,72 (0,007)	9,12 (0,017)	3,34 (0,010)
Secondary 1st Cycle	10,70 (0,010)	0,5678 (0,046)	0,2293 (0,029)	0,1158 (0,018)	8,94 (0,013)	2,59 (0,006)	9,23 (0,019)
Secondary 2nd Cycle	5,73 (0,006)	0,3746 (0,061)	0,1219 (0,025)	0,0506 (0,014)	3,15 (0,007)	0,30 (0,001)	2,16 (0,007)
Higher Education	4,73 (0,005)	0,0786 (0,031)	0,0171 (0,006)	0,0053 (0,002)	0,54 (0,002)	0,30 (0,001)	0,18 (0,000)
Others	36,37 (0,020)	0,8320 (0,023)	0,3445 (0,016)	0,1766 (0,013)	44,84 (0,027)	46,96 (0,030)	48,28 (0,035)
Cameroon	100,00	0,6797 (0,016)	0,2690 (0,009)	0,1341 (0,006)	100,00	100,00	100,00

Note: figures in parentheses represent standard deviations.

Source: calculated by the authors from ECAM 1996 Survey data.

The category 'undefined' (others) present the highest incidence of poverty and the highest share contribution to national poverty. What is clear in Table 8.20 is that the share contribution to national poverty is quite stable when the alpha parameter varies whether the lower or the upper poverty line is used. In any case, it seems to emerge from information contained in the preceding three tables that a higher level of education is associated with a low incidence of poverty.

Health and Poverty

The poor households visit public health centres more than non-poor households who are supposed to visit private clinics for better-quality health care. In the sections that follow, we discuss the types of health centres visited and health specialists consulted. We also analyse expenditures to ascertain to what extent they constitute a constraint on the poor.

Table 8.21: Type of Health Centres Visited

Type of Health Centre	Public		Private		Total
Region	Poor	Non-Poor	Poor	Non-Poor	
Yaoundé	20 (32,3)	19 (27,1)	27 (28,1)	22 (24,4)	88 (27,0)
Douala	11 (17,7)	16 (22,0)	30 (31,3)	29 (29,6)	86 (26,4)
Other Cities	14 (22,6)	17 (24,3)	18 (18,8)	23 (23,5)	72 (22,1)
Rural Forest	7 (11,3)	8 (11,4)	10 (10,4)	3 (3,1)	28 (8,6)
Rural High Plateaux	8 (12,9)	7 (10,0)	10 (10,4)	19 (19,4)	44 (13,5)
Rural Savannah	2 (3,2)	3 (4,3)	1 (1,0)	2 (2,0)	8 (2,5)
Total	62 (100,0)	70 (100,0)	96 (100,0)	98 (100,0)	326 (100,0)

Note: figures in parentheses are percentages of the column total.

Source: calculated by the authors from ECAM 1996 Survey data.

Table 8.21 shows that 27.0 per cent of households visited health centres in the Yaoundé region, 26.4 per cent in Douala, 22.1 per cent in other cities, 8.6 per cent in the rural Forest, 13.5 per cent in rural High Plateaux and 2.5 per cent in the rural areas of the Savannah.

From the results of this table, it is seen that the consultation rate is lower in rural areas than in urban areas. By matching the consultation rate with the standard of living, we note that 32.3 per cent of poor households in Yaoundé visited public health care centres. This percentage was 17.7 per cent in Douala, 22.6 per cent in Other cities, 11.3 per cent in the rural area of the Forest region, 12.9 per cent in rural High Plateaux and 3.2 per cent in rural Savannah. This data reveal that a low

proportion of the poor visited public health centres in rural areas. This may be explained by the fact that in some rural areas there are no public health centres accessible to the population.

What seems paradoxical in Table 8.21 is that in Douala, Yaoundé and the rural Forest regions, the proportion of poor households that visits private health centres is higher than that of non-poor households. This implies that the more households get out of poverty, the more dissatisfied they become with local (or national) public health centres. This however may not be generalized because in Douala and in Other cities, the percentage of the non-poor who visit public health centres is higher than that among poor households. In the rural area of the Forest and in the Other cities, a lower number of the poor visit private health centres. Perhaps it could be that the proportion of the non-poor near the poverty line is higher in those cities. In other words, private health centres have become accessible to the poor.

Table 8.22: Health Care Specialists Consulted by Patients

Region	Healer		Medical Assistant		Nurse		Doctor		Total
	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	
Yaoundé	4 (14,3)	3 (17,6)	2 (8,0)	2 (9,5)	5 (22,7)	7 (26,9)	28 (44,4)	26 (27,4)	89 (26,7)
Douala	9 (32,1)	5 (29,4)	1 (4,0)	2 (9,5)	8 (36,4)	5 (19,2)	16 (25,4)	27 (28,4)	88 (26,4)
Other Cities	6 (21,4)	2 (11,8)	7 (28,0)	5 (23,8)	4 (18,2)	5 (19,2)	10 (15,9)	27 (28,4)	73 (21,9)
Rural Forest	4 (14,3)	1 (5,9)	2 (8,0)	1 (4,8)	4 (18,2)	6 (23,1)	7 (11,1)	3 (3,2)	28 (8,4)
Rural-High Plateaux	4 (14,3)	6 (35,9)	13 (52,0)	11 (52,4)	nd (7,7)	2 (3,2)	2 (8,4)	8 (14,1)	47 (14,1)
Rural Savannah	1 (3,6)	nd	nd	nd	1 (4,5)	1 (3,8)	nd	4 (4,7)	8 (2,4)
Total	28 (100,0)	17 (100,0)	25 (100,0)	21 (100,0)	22 (100,0)	26 (100,0)	63 (100,0)	95 (100,0)	333 (100,0)

Note: figures in parentheses are percentages of the column total.

Source: calculated by the authors from ECAM 1996 Survey data.

It is important to be interested in the types of health centres visited by the categories of the poor and the non-poor; it is also important to examine the type of medical specialists consulted, as shown in Table 8.22.

It is seen from Table 8.22 that consulting healers is less frequent (3.6 per cent) among the poor of rural areas of the Savannah than in other regions. It is mainly in Douala that poor households consult healers most (32.1 per cent), and in the Other cities (21.4 per cent). It can be concluded that it is mainly in urban areas that poor households consult healers with greater frequency. It should be noted, however, that more non-poor households consult healers in Douala (29.4 per cent) and in the

High Plateaux (35.9 per cent). The sociological composition of the regions of Cameroon can well explain this.

Table 8.22 also shows that 44 per cent of the poor consult a medical doctor in Yaoundé against 27.4 per cent of the non-poor, whereas in the Forest and Savannah regions these figures are respectively 11.1 and 3.2 per cent. These results confirm those of Table 8.21, where the poor visit private health care centres with more frequency than the non-poor.

As a whole, the attendance rate for formal health centres is higher in rural areas than in urban areas, which would indicate a weak demand for health services owing to the very low incomes of rural households. As in the case of education, we also present the expenditures that households devote to health care, which clarifies the constraints faced by the poor. The data in Table 8.23 show that a poor household spends an average of 7,000 CFAF on health care annually, whereas the non-poor spends about 11,000 CFAF. This situation forces the poor to make more efforts than the non-poor.

On the regional level, we observe, in general, the importance of health care expenditures in the larger cities of Douala and Yaoundé. In effect, a household living in Douala spends on average 22,476 CFAF, and in Yaoundé, a little more than 21,000 CFAF; these sums largely exceed health care expenditures in the other regions. In rural regions, on the other hand, household health expenditures are low and remain very low as compared to those of urban areas, especially expenditures in the Savannah region, which indicates the higher prevalence of poverty in that region.

Table 8.23: Average Amounts in CFAF per Year per Adult-Equivalent of Health Expenditures by Region and According to Standard of Living

Stratum Analysed	Poor	Non-Poor	Total
Yaoundé	17,328	26,037	21,523
Douala	18,097	26,566	22,476
Other Cities	9,993	17,558	13,829
Rural Forest	6,279	5,660	6,072
Rural High Plateaux	4,627	9,815	7,531
Rural Savannah	783	1,793	1,,100
Cameroon	7232	11,485	9,388

Source: calculated by the authors from ECAM 1996 Survey data.

In comparison with expenditures on education, we note a difference between the two types of expenditures. In effect, the amount spent by households on health is higher than that devoted to education. This implies that any reduction in expenditures by households has an impact on the resources allocated to health, as well as education.

Housing and Poverty

The possibility of having decent housing at one's disposal constitutes one of the elements for the satisfaction of basic needs. In Cameroon, as in many developing countries, the government has intervened in the housing sector, especially in urban

areas, by building public housing (Société Immobilière du Cameroun (SIC), for example). The ECAM survey also includes data on the characteristics of housing (availability of electricity, water supply etc.), as seen in Table 8.24.

In Table 8.24, it is observed that more poor people own their housing (12.6 per cent) than the non-poor (11.6 per cent) in Yaoundé; 14.6 per cent against 12.1 per cent in the Other cities; and 19.9 per cent against 15.3 per cent in the rural area of the Forest region. More of the poor are tenants, or live in subsidized housing than the non-poor. The fact that many poor households own their housing needs an explanation. Many poor households live in rural areas where they have easier access to property ownership. Moreover, many well-to-do households have a strong preference for renting or living in subsidized housing, owing perhaps to the fact that they are very demanding as concerns the quality of their housing, which depends on income.

**Table 8.24: Household Housing Status
According to Standard of Living and Region (in %)**

	Owner		Simple Tenancy		
	Poor	Non-Poor	Poor	Non-Poor	
Yaoundé	12,4	11,6	39,4	29,7	
Douala	19,9	23,2	20,7	28,2	
Other Cities	14,6	12,1	30,6	30,0	
Rural Forest	19,6	15,3	2,6	2,1	
Rural High Plateaux	13,5	22,3	1,0	7,3	
Rural Savannah	19,9	15,5	5,7	2,7	
Total	100,0	100,0	100,0	100,0	
	Housed by the Family		Subsidized Housing		Total
	Poor	Non- Poor	Poor	Non- Poor	
Yaoundé	31,0	32,3	26,7	9,4	20,7
Douala	20,7	18,5	13,3	18,8	22,2
Other Cities	22,4	21,5	40,0	56,3	20,5
Rural Forest	12,1	10,8	20,0	3,1	12,3
Rural High Plateaux	6,9	15,4		12,5	12,2
Rural Savannah	6,9	1,5			12,1
Total	100,0	100,0	100,0	100,0	100,0

Source: calculated by the authors from ECAM 1996 Survey data.

This may also be explained by the fact that in urban areas there is a greater concentration of property, and traditionally there also exists a lot more rental and subsidized housing built to house civil servants and private sector employees. Lastly, we note that there are more tenants in urban areas and much more housing ownership in rural areas.

More poor households are simple tenants in Yaoundé than in other regions of Cameroon (39.4 per cent), followed by Other cities (30.6 per cent). It is in urban areas that a greater proportion of poor households are tenants. This result seems quite obvious, since property is more costly in urban centres where non-poor households can afford it. This is not always the case in rural areas where people are

not demanding in terms of the choice of material they use in building their housing, and where land is often cheaper and sometimes free of charge.

Another interesting result arising from Table 8.24 is that 56.5 per cent of non-poor households live in subsidized housing in the Other cities, against 40 per cent of the poor. This is also the case in Douala, where more non-poor households (18.8 per cent) live in subsidized housing, against 13.3 per cent of poor households. This distribution in housing is quite unequal and inequitable: one would expect the poor to be the ones who should benefit from subsidized housing.

Conclusions with Recommendations for Poverty Reduction

The purpose of this study was to analyse in detail a poverty profile for Cameroon in 1996. For the profile, the basic needs costs (BNC) method was used to calculate poverty lines for Cameroon. This procedure uses daily nutritional requirements. Based on the BNC method (Ravaillon 1992, 1994; Ravaillon et Bidani 1994; and Sen 1976), the poverty line is calculated. First, we establish a poverty line in terms of food and then proceed to allocate non-food items in order to obtain the poverty line. By using the ECAM 96 Survey data, this study shows that the application of this method leads to obtaining two sets of poverty lines, the lower and upper poverty lines.

From our analysis of Cameroon's poverty profile it is observed that poverty affects the rural areas more severely than urban areas. Moreover, the decomposition of national poverty into six regions: Yaoundé, Douala, Other Cities, the Forest, High Plateaux and Savannah, shows that the region of Yaoundé is least affected by poverty, whereas the Forest region, followed by the High Plateaux, show very high levels of poverty.

We should note that even though the majority of the poor live in rural areas, it should nonetheless be recognized that the proportion of the urban poor has also been increasing, especially in the last decade, as the various economic reform policies were implemented. In urban areas in particular, the economic reforms have seriously penalized several social groups. In effect, the drastic reductions of incomes in several sectors of economic activity, and the cutback of personnel in private and public enterprises have generated a new class of poor people. From the analysis it is suggested that rural areas should be the first recipients of poverty reduction programmes, since they account for the majority of the poor in the country. This could also be done in the form of transfer payments, increases in income, generation and creation of economic activities and the provision of basic social services to the rural areas.

In Cameroon, a strategy has already been initiated in the national population policy known as 'responsible parenthood', which calls for the government to draw each couple's attention to the necessity of taking into consideration its socio-economic potential when defining the size of its family and the spacing of the children.

Independent workers, most farmers and the unemployed are the poorest. They are characterized by high incidences of poverty, in depth and severity. Hence the government should logically give priority to farmers in any short- or medium-term poverty-reduction strategy. The majority of poor households presently in the informal

sector should be the priority target in efforts to reduce urban poverty. Therefore, it would be useful to allocate a significant share of the resources earmarked for urban poverty reduction.

Most of the informal jobs are characterized by low wages and low productivity. Moreover, this sector represents an important source of jobs for women living in urban areas. As a consequence, the vulnerability of the informal sector affects mostly women. Furthermore, given the significant annual inflow of new job seekers into the labour market, and the fact that the informal sector alone is able to absorb them, it should be obvious that any policy for promoting this sector should be a key of any growth policy aimed at poverty reduction. This entails taking measures to assist informal sector agents in the creation of small and medium enterprises (SMEs) and small and medium industries (SMIs). The study shows that a high level of education is usually associated with a low incidence of poverty. As a consequence, the lack of education constitutes a serious handicap to the extent that it is usually a source of low labour productivity and low levels of incomes and expenditures.

In recent years, education has witnessed significant erosion both in the levels of the quantity and quality of the teaching. Any policy aiming to improve this sector should focus on the provision of adequate training for jobs, and incentives for women to acquire education. Reforms in the education system are necessary and should aim not only at the provision of education and training adapted to the economic needs of the country, but also at the acquisition of good general level of education for citizenship. Significant disparities exist between rural areas, where most people own their housing, and urban areas, where a large number of the poor are tenants. But it should be noted that being an owner is not necessarily a good welfare indicator to the extent that the houses in question are more often than not slums. Needless to say, these housing conditions seriously need improvement, especially in the urban environment where city planning, enforcement of zoning laws and improvement in the sanitation of cities should go a long way in helping the poor, not to mention the implementation of more vigorous housing programmes.

References

- Ali, A.A.G., 1997, *Dealing with Poverty and Income Distribution Issues in Developing Countries: Cross Regional Experiences*, Nairobi: AERC.
- Amin, Aloysius Ajab and Jean-Luc Dubois, 1999, *A Update of the :Cameroon Poverty Profile: Reducing the Current Poverty and Tempering the Increase in Inequality, A World Bank Study*: <http://ww4.worldbank.org/afr/poverty/pdf/internal/docnov/01794.pdf> [May 2003].
- Anand, S., and C.J. Harris, 1994, 'Choosing a Welfare Indicator', *American Economic Review Papers and Proceedings*, Vol. 84, No. 2, pp. 226–31.
- Atkinson, Anthony, 1987, 'On the Measurement of Poverty', *Econometrica*, Vol. 55, pp. 749–64.
- Balisacan, A.M., 1995, 'Anatomy of Poverty During Adjustment: The Case of the Philippines', *Economic Development and Cultural Change*, Vol. 44, No. 1, pp. 33–60.

- Baye, M.F., 1997, 'Inequality and the Degree of Poverty Among the Public Sector Workers in Cameroon', paper presented in the Seminar on Macroeconomic Management and Poverty Alleviation, University of Yaoundé II, Yaoundé. 9–10 September.
- Canagarajan, S., J. Ngwafon and S. Thomas, 1997, *The Evolution of Poverty and Welfare in Nigeria*, World Bank Policy Research Working Paper 1715, Washington, DC: World Bank.
- Chaudhuri, S. and M. Ravallion, 1994, 'How Well Do Static Indicators Identify the Chronically Poor?', *Journal of Public Economics*, Vol. 53, pp. 367–94.
- Clark, S., R. Hemming and D.T. Ulph, 1982, 'On Indices in the Measurement of Poverty', *Economic Journal*, Vol. 91, pp. 525–6.
- Coulombe, H. et A. McKay, 1998, 'La mesure de la pauvreté: Vue d'ensemble et méthodologie avec illustration dans le cas du Ghana', *L'Actualité Economique, Revue d'Analyse Economique*, Vol. 74, No. 3.
- Datt, G. and M. Ravallion, 1991, *Growth and Redistribution Components of Changes in Poverty Measures. A Decomposition with Application to Brazil and India in the 1980s*, World Bank, LSMS Working Paper 83, Washington, DC: World Bank.
- Deaton, A., 1997, *The Analysis of Household Survey: A Microeconomic Approach to Development Policy*, Washington, DC and Baltimore: World Bank and Johns Hopkins University Press.
- Demery, L. and L. Squire, 1996, 'Macroeconomic Adjustment and Poverty in Africa: An Emerging Picture', *World Bank Research Observer*, Vol. 11, No. 1.
- Fambon, S., 1997, 'Réflexion sur quelques mesures de la pauvreté', papier présenté au séminaire sur la gestion macroéconomique et la lutte contre la pauvreté, organisé par l'Université de Yaoundé II, Yaoundé, 9–10 septembre.
- Fambon, S., Aloysius A. Amin, Francis M. Baye, Issidor Noumba, Isaac Tamba, and Regina Tawah, 2000, *Réformes économiques et pauvreté au Cameroun durant les années 1990*, Rapport projet collaboratif sur la pauvreté, Nairobi: AERC, mai.
- Fields, G., 1980, *Poverty, Inequality and Development*, New York: Cambridge University Press.
- Foster, J., 1984, 'On Economic Poverty: A Survey of Aggregate Measures', *Advances in Econometrics*, Vol. 3, pp. 215–25.
- Foster, J.E. and A.F. Shorrocks, 1988, 'Poverty Orderings', *Econometrica*, Vol. 56, pp. 173–7.
- Foster, J.E. and A.F. Shorrocks, 1991, 'Subgroup Consistent Poverty Indices', *Econometrica*, Vol. 59, pp. 687–709.
- Foster, J., J. Greer and E. Thorbecke, 1984, 'A Class of Decomposable Poverty Measures', *Econometrica*, Vol. 52, No. 88, pp. 215–51.
- Greer, J. and E. Thorbecke, 1987, 'Food Poverty Profile Applied to Kenya Smallholders', *Economic Development and Cultural Change*, Vol. 35, No.1.
- Grootaert, C. and R. Kanbur, 1990, *Policy-Oriented Analysis of Poverty and the Social Dimensions of Structural Adjustment: A Methodology and Proposed Application to Côte d'Ivoire, 1985–88*, Washington, DC: World Bank, SDA, Policy Analysis.
- Grootaert, C., L. Demery et R. Kanbur, 1996, *Réformes économiques et analyse de la pauvreté: l'expérience de la Côte d'Ivoire*, Paris: l'Harmattan.
- Hagenaars, A., 1987, 'A Class of Poverty Indices', *International Economic Review*, Vol. 28, No. 3, pp. 583–607.
- Kabubo, J.W. and T.W. Kiriti, 1997, *Structural Adjustment, Poverty and Economic Growth: An Analysis for Kenya*, A Work in Progress presented at the AERC Workshop, Nairobi, May.

- Kakwani, N., 1980, *Income Inequality and Poverty: Methods of Estimation and Policy Applications*, Oxford: Oxford University Press.
- Kakwani, N. and K. Subbarao, 1990, 'Rural Poverty and its Alleviation in India', *Economic and Political Weekly*, Vol. 25, pp. A2–A16.
- Kamgnia, B. et J. Timnou, 1999, *Pauvreté au Cameroun: Evolution dans une conjoncture d'ajustement économique*, Rapport définitif 1999 de recherche AERC, Nairobi: AERC.
- Kanbur, S.M., 1987, 'Structural Adjustment, Macroeconomic Adjustment and Poverty: A Methodology for Analysis', *World Development*, Vol. 15, pp. 1515–26.
- Kyereme S. and E. Thorbecke, 1987, 'Food Poverty Profile and Decomposition Applied to Ghana', *World Development*, Vol. 15, No. 9, pp. 1189–99.
- Lewis, G.W. and D.T. Ulph, 1988, 'Poverty, Inequality and Welfare', *Economic Journal*, Vol. 98, pp. 117–31.
- Lipton, M. and M. Ravallion, 1995, 'Poverty and Policy'. In: J. Behrman and T.N. Srinivasan, eds, *Handbook of Development Economics*, Vol. III, Amsterdam: Elsevier Science B.V.
- Lynch, S.G., 1991, *Income Distribution, Poverty and Consumer Preference in Cameroon*, Washington, DC: Cornell Food and Nutrition Policy Program.
- McGillivray, M. and H. White, 1993, 'Measuring Development? UNDP's Human Development Index', *Journal of International Development*, Vol. 5, No. 2, pp. 183–92.
- MINPAT/DP/SEP, 1983, *Perspectives Macroéconomiques à horizon 1995 et 2000*, Yaoundé.
- Morris, M.D., 1979, *Measuring the Conditions of the World's Poor: The PQLI Index*, Oxford: Pergamon.
- Njinkeu D., G. Kobou and I. Noumba, 1997, *Structural Adjustment and Poverty in Cameroon: A Labor Market Analysis*, Final Report submitted to ICEG, Nairobi.
- Paul, Sartya, 1989, 'A Model of Constructing the Poverty Line', *Journal of Development Economics*, Vol. 30, pp. 129–44.
- Piachaud, D., 1987, 'Problems in the Definition and Measurement of Poverty', *Journal of Social Policy*, Vol. 16, No. 2, pp. 147–64.
- PNUD – Cameroun, 1993, 1996, 1998, *Rapport sur le Développement Humain au Cameroun*, Yaoundé.
- Pyatt, G., 1987, 'Measuring Welfare, Poverty and Inequality', *Economic Journal*, Vol. 97, No. 386, pp. 459–67.

The Determinants of Poverty in Cameroon

Bernadette Dia Kamgnia and Joseph-Pierre Timnou

Introduction

Poverty is quite a complex phenomenon, which places the individual in a state of destitution or indigence. Marginalization, exclusion and iniquity are some of the situations that characterize the poor, though these are far from being the only ones. The study of poverty can be done from an economic perspective, as well as a social sciences perspective. But the research work undertaken so far highlights only certain aspects of poverty, where one can seek to explain the probability of a given individual falling below the poverty line. This provides a framework to predict the probability of being poor. Yet overall the complexity of the phenomenon is better looked at in a multivariate analysis.

In developed countries, poverty seems to be caused by unemployment. In the case of Sub-Saharan African countries in general and Cameroon in particular, the change in the structure of the labour market following the structural adjustment programmes has increased the level of poverty. Indeed, the unemployment of graduates has reached alarming levels because of retrenchment in recruitment in the public sector and the weak hiring capacity of the private sector. Yet the level of income or consumption, the type or the branch of activity, and even the economic level in a general can give an idea of the level of poverty in a given population. The level and the form of education, the sector of residence, etc., are equally relevant criteria in describing poverty, as well as demographic variables such as sex, age, household size, life expectancy at birth, morbidity or the level of mortality. Poverty can be conceived as a phenomenon resulting from the combination of economic, social and political environments. These create conditions, among others, of exclusion, marginalization and iniquity. Some of those factors were identified by the World Bank (1995) in explaining the living conditions in Cameroon in 1983/84.

The Department of Statistics and National Accounting (1996), using the 1996 Cameroonian household budget survey, estimated a poverty incidence of 50.5 per cent for Cameroon as a whole, while the World Bank (1995) estimates indicated 40

per cent with respect to the living conditions in 1983/84. Using the same database of 1996 and based on the food energy intake method, Kamgnia and Timnou (2000) estimated the incidence of poverty at 51.8 per cent. Amin and Dubois (1999) show an increase of the poverty level over the years. Basing their work on the 1996 survey data Fambon et al. (2000) determined a rate ranging between 44 and 68 per cent using the 'cost of basic needs' method. How, then, has the structure of the determinants of poverty evolved? This chapter proposes to identify the determinants of poverty in Cameroon over the 1990s. More specifically, the factors are analysed according to their contribution to the classification of the households as poor and non-poor.

Poverty, a Plural Phenomenon

Poverty, being a multidimensional phenomenon, can be explained in a multivariate analysis such as discriminant analysis.

The Concepts of Poverty

There are two schools of thought on the measure and explanation of poverty: the welfarist approach and the capability approach. Whereas the first school provides a one-dimensional concept, the second approach conceives it as multidimensional.

The welfarist conception of poverty

From its conception, welfarism centres the debate on well-being. Well-being refers to what is fundamental in life, and what every individual strives for. Moreover, the individual is a rational individual, being able to rationally use endowments in order to attain the highest level of utility. Consequently, poverty is conceived as a difference in the ranking of the preferences so as to maintain a given level of well-being.

Commonly used indicators of well-being are income and consumption expenditure. Both indicators lead to the determination of a poverty line, which is used in the ranking of income (expenditure) and thus in the comparison between states of poverty. An individual could be regarded as poor if, while working, he deliberately chooses to consume little, even though the potentialities of work and of consumption exist. Total consumption is preferred to income as it is less prone to fluctuating conditions, and is easily estimated from survey data. Yet neither of those two variables is a perfect proxy for well-being. Income and consumption do not express the role of the well-being in the evaluation of public goods and non-marketable goods such as freedom, security, peace or health, as pointed out by Duclos (2001). The capability approach tries to correct this weakness.

Diverging Capabilities

According to Sen (1976), poverty is more the expression of differences in capabilities. Schneider-Bunner (1997), referring to Sen, notes that well-being is not the only value to be taken into account but also utility, which gives a biased representation of well-being. Moreover, the evaluation of happiness or accomplishment of people raises moral difficulties. Thus, those who are deprived of all do not have the cou-

rage to demand more, and on the scale of satisfaction of wants, their deprivations are so low that they do not have a value any more. Of course, one must strive for the means rather than the ends. But, according to Sen, an appropriate way to incorporate them in the analysis would be to pose the problem in terms of capability, that is to say, the capacity of the individuals to transform the characteristics of the goods into realization. That would be, for example, what an individual is 'able' to get out of an acquired good or out of the characteristics of that good. Within this framework, poverty is looked at in terms of differences in the uses of capabilities. Indeed, according to Sen (1990), two individuals having the same capabilities can get to very different results given that each one has the choice of using their capabilities. Sen bases his analysis on the example of a woman who, even if she were equally endowed in basic goods as a man, could be handicapped because of biological factors (period of maternity) or social ones (traditional role in the family). Capability consequently expresses the freedom that a person has to choose between various possible ways of life.

In the same way the freedom to choose is large, as much the structure of capabilities is wide. The need to account for such diversity in the design of policies for reducing poverty gave room to the development of the basic needs approach in the seventeenth century (Asselin and Dauphin 2001). According to Sen (1992), needs to be considered as essential range from those relating to health, education, housing and clothing, to those expressing the fact of being happy, having respect, participating in the life of the community, etc. But, following Streeten et al. (1981), basic needs must be looked at in terms of the minimal quantities of food, shelter, water and health care necessary to avoid being sick or malnourished, for instance. In spite of such a rather synthetic appraisal, the scale of basic needs can be quite broad. In fact, the concept of essential varies with the characteristics of the individual and according to his living conditions. Hence, following that approach poverty is essentially a multidimensional phenomenon.

The regular functioning of the market should ensure the economic as well as the social integration of the individual. Yet, for reasons often perceived as household-based, socio-demographic or ethnic, individuals are defined at the margin of the activities of production as well as of consumption, and thus constitute poverty pockets, even in countries considered to be rich. Traditional factors of social exclusion defined in explaining poverty in developed as well as developing countries are: low level of education, cultural inequality, single-parent families, health deficiencies, and ethnic group. But more people get rejected from the economic system without being exposed to the traditional factors of risk, while the conditions of the poor are worsening (Greffé 1994). How, then, can the determinants of poverty in Cameroon be identified?

Discriminating Among Households

The method of analysis in this chapter is to characterize the poor households so that, knowing the characteristics of an individual, it is possible to classify him/her either as poor or as non-poor. Thus, a factorial discriminant analysis is carried out.

The problem is that of the classification of N individuals characterized by a set of K variables ($X_1, X_2, \dots, X_K$) into two classes defined by the variable Y . One then seeks linear combinations of the K variables, that is linear discriminant functions of the following form:

$$D = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_K X_K \quad (1)$$

The β coefficients are determined such that the discriminant function is as different as possible from one class to the other one; this amounts to maximising the ratio of the between-groups variance to the within-group variance:

$$\frac{\text{Between - groups variance}}{\text{Within - groups variance}} \quad (2)$$

The larger the order of magnitude of a coefficient, the more the factor contributes to the discriminant function. The performance of that function is better appreciated using the ratio of within-groups variance to total variance:

$$\lambda = \frac{\text{Between - groups variance}}{\text{Total variance}} \quad (3)$$

The use of this ratio is such that, the larger it is, the weaker the discriminating power is, given that the within-groups variability contributes more to total variability than the between-groups variability. X defines a matrix of explanatory variables of poverty. In the present study, X is specified so as to express the socio-economic characteristics of the households, with an emphasis on the links between poverty and the structure of the labour market. More specifically, the factors comprising X are distinguished by:

- economic factors, such as income, expenditures on food, education; and health;
- household level factors, such as household size, type of household, number of children, number of spouses;
- individual factors: age, sex, educational level;
- factors pertaining to the structure of the labour market.

The database used for this study is the 1996 Cameroonian household budget survey (ECAM'96). This database contains many variables, which can be put into three categories. The first includes the variables for which the majority of the values are missing, without that being able to describe a real situation on the ground. That is the case of the majority of questions related to health care (last consultation, type of healthcare centre, physician consulted, etc.), issues on migration and the presence of the household head. It was not interesting to include those variables in the analysis, given that the missing variables are many and they do not describe a homogeneous situation. The second category is made up of the variables whose link with poverty is obvious. Thus, level of income, total expenditure, type of housing, roof, land, source of energy used, possession of modern equipment (radio, television, car), etc., directly assist in distinguishing the poor from the non-poor. Finally, the last category comprises variables

for which the link with poverty is not obvious. Combining these with the variables of the second category, one clearly highlights the link of poverty to the standard of living. Some of those variables are: age, sex, level of education, type of activity, type of household, size of the household, and sector of activity.

Poverty in Cameroon, a Household-based Phenomenon

This phenomenon is appraised on the analysis of the a priori links on the one hand, and by evaluating a discriminant function on the other.

The Effects of Economic Factors

The economic factors considered are mainly those related to the income of households and how it is spent. Emphasis is first put on the main categories of expenditure in the household, namely: food, health, education and leisure. The study of those expenses reveals some clear tendencies. Moreover, the concept of well-being considered in the study is grounded on the level of food expenditure. Three categories – poor, intermediate and rich – were considered representing 32, 43 and 25 per cent of the households respectively.

Table 9.1 of the expenditure (in terms of adult-equivalent) by region and standard of living, on average indicates heavier health expenditure for the poor than the rich (9.9 per cent against 5.9 per cent), reaching a maximum of more than 14 per cent in the villages of the western Highlands.

Of course, health is an essential need for a human being. But the importance of the expenditure on that item is not necessarily an indicator of well-being. Indeed, bad health is more of the effect of bad living conditions in general, and of an inadequate feeding in particular. It is thus normal that the poor often spend more on health, given that the individual's health is always at risk when other essential needs are not satisfied.

Expenditure on Health (see Table 9.1)

Table 9.1: Average Expenditure on Health

Region	Health Expenditure				% of Total Expenditure			
	Poor	Intermediate	Rich	Total	Poor	Intermediate	Rich	Total
Yaoundé	13,794	28,917	38,365	30,152	9.40	10.14	5.73	7.32
Douala	12,308	27,134	47,067	34,916	9.24	10.23	6.81	7.64
Other Cities	11,216	15,911	32,054	22,920	8.70	6.85	6.24	6.51
Rural Forest	11,932	15,432	22,600	14,652	11.25	8.17	6.06	8.51
Rural Western Highlands	14,603	29,286	21,031	21,317	14.10	13.92	4.77	10.64
Rural Savannah	2,938	6,525	10,772	6,033	3.44	3.35	2.60	3.09
Total	10,555	19,164	32,729	20,760	9.89	8.52	5.87	7.15

Note: the expenditure is evaluated in adult-equivalent.

Source: authors' calculations from the 1996 National Households survey (ECAM).

Expenditure on Education

The education of children is an equally essential need for both the poor and the non-poor, corroborated by the fact that both benefit from the same educational system (apart from some establishments especially meant for the children of rich families or those wealthier households that can afford to send their children to school abroad). In the case of Cameroon, the significant differences in expenditures between the city and the countryside could be due to the discrepancies on levels of schooling in the two areas. Despite the higher expenditure in cities, mainly poor households proportionally devote more on education, with ratios that are greater than one, as shown in Table 9.2.

Table 9.2: Average Expenditure on Education

Region	Health Expenditure				% of Total Expenditure			
	Poor	Inter-mediate	Rich	Total	Poor	Inter-mediate	Rich	Total
Yaoundé	12,061	19,116	28,709	21,697	8.22	6.70	4.29	5.27
Douala	12,760	19,854	26,801	22,300	9.58	7.48	3.88	4.88
Other Cities	7,803	10,817	18,234	13,930	6.06	4.66	3.55	3.96
Rural Forest	6,806	5,604	4,829	6,072	6.42	2.97	1.29	3.53
Rural Western	4,684	7,676	8,788	6,513	4.52	3.65	1.99	3.25
Rural Savannah	825	908	2,177	1,100	0.97	0.47	0.53	0.56
Total	5,527	9,500	18,407	11,025	5.18	4.22	3.30	3.80

Note: the expenditure is evaluated in adult-equivalent.

Source: authors' calculations from the 1996 National Households survey (ECAM).

Expenditure on Leisure

The poor cannot easily afford to spend on leisure. The data confirm this point of view, and one notes that the expenditure on leisure only defines a residual share of the total expenditure of the poor (Table 9.3).

Table 9.3: Average Expenditure on Leisure

Region	Expenditure on Leisure				% of Total Expenditure			
	Poor	Inter-mediate	Rich	Total	Poor	Inter-mediate	Rich	Total
Yaoundé	607	2,133	11,090	5,352	0.41	0.75	1.66	1.30
Douala	900	4,558	13,168	8,299	0.68	1.72	1.90	1.81
Other Cities	920	1,353	5,987	3,480	0.71	0.58	1.16	0.99
Rural Forest	558	1,921	9,907	2,236	0.53	1.02	2.66	1.30
Rural western Highlands	458	1,925	4,085	1,621	0.44	0.92	0.93	0.81
Rural Savannah	199	509	1,953	654	0.23	0.26	0.47	0.33
Total	497	1,876	8,169	3,359	0.47	0.83	1.47	1.16

Note: the expenditure is evaluated in adult-equivalent.

Source: authors' calculations from the 1996 National Households Survey (ECAM).

Of course, one could note that those expenditures are not especially high for the non-poor either, given that they total only 1.5 per cent on average, the maximum being of 2.7 per cent in the Forest rural zone. Globally, the expenditure on education and on food are most significant. But the expenditure on food is highest in the rural Savanna zone where the incidence of poverty is the strongest (Kamgnia and Timnou 2000).

Effects of Household-level Factors

Household-based factors that are likely to explain poverty are many but only a few could be found in the database. These are: household size, number of spouses, number of children, and type of household. These variables are strongly correlated (see Appendix).

The largest sizes of household are found in rural areas, except in the Savannah area (Table 9.4). Such results remain in conformity with the data of the 1987 census, which indicate household size of 5.3 people in the rural areas against 5.0 in the urban areas. The size differential is much larger with respect to the standard of living. The poor have on average of 7.3 persons in their households against only 4.4 for the non-poor. The high fertility among the excluded poor, and relatively expensive birth control methods, could partly explain this situation. Indeed, the concept of old age assurance attached to a generous number of offspring is quite popular among the poor.

Table 9.4: Size of Household by Region and Standard of Living

Region	Household Size				Size in Terms of Adult-equivalent *			
	Poor	Inter- mediate	Rich	Total	Poor	Inter- mediate	Rich	Total
Yaoundé	8.45	6.41	3.72	5.70	6.70	5.06	3.12	4.57
Douala	7.12	6.52	4.30	5.51	5.66	5.21	3.58	4.47
Other Cities	8.86	6.59	4.27	5.79	6.70	5.09	3.40	4.50
Rural Forest	8.66	5.99	3.60	6.95	6.87	4.68	2.90	5.49
Rural Western Highlands	8.98	6.04	3.88	7.01	6.57	4.55	2.91	5.19
Rural Savannah	6.54	5.82	4.08	5.76	5.08	4.45	3.40	4.48
Total	8.10	6.20	4.10	6.11	6.20	4.80	3.33	4.76

* At least 15 years old is taken to be equal to 1; less than 15 years old is equal to 0.5.

Source: authors' calculations from the 1996 National Households survey (ECAM).

Effects of the Individual Factors

Factors related to the individual are taken as those that characterize the head of the household. The effects of age, and sex were analysed along with the a priori links. Indeed, the level of poverty varies notably with the age of the household head. Irrespective of area, one notes that the lowest average age is found in the rich people group, and the level decreases as one moves from the poor group to the rich group, as indicated by Table 9.5. The same observation holds for the distribution of households according to the age of the household head. Hence, it can be said that the higher the age of the household head, the greater the chance of the household

of being poor. A possible explanation lies on the fact that old people, in the context of economic crisis, find it difficult to grasp new opportunities. Only a general recovery of the national economic condition with visible effects on income will be able to allow them to improve their living conditions.

Table 9.5: Average Age of Household Head by Region and Standard of Living

Region	Poor	Intermediate	Rich	Total
Yaoundé	43.67	39.49	37.24	39.29
Douala	45.24	42.17	39.01	41.04
Other Cities	50.09	43.41	37.64	41.55
Rural Forest	51.96	47.08	46.56	49.30
Rural Western Highlands	49.54	47.37	38.48	46.88
Rural Savannah	46.61	41.60	41.36	43.28
Total	48.64	43.47	38.96	43.60

Source: authors' calculations from the 1996 National Households survey (ECAM).

As far as the households' food energy intake is concerned, households headed by women have a standard of living that is better than that of households headed by men. As regard the nutritional status of the household, women play the primary role, even under conditions where it is men who provide consumption needs. Of course, to correctly satisfy the consumption needs supposes that significant means are required. There are so far less than 20 per cent of households headed by women in Cameroon. The phenomenon of women heads of household relates primarily to widowhood and divorce. The increasing number of unmarried women and women having taken the role of head of the household in the place of their husbands is rather recent, and tends to result from the evolution of the social structures subjected to the constraints of the economic crisis, as pointed out by Pilon (1993). It is thus a phenomenon that is more common in urban areas than the countryside. Under such conditions, one would need further research to find out whether it could be relevant to encourage the evolution of this phenomenon, as regards the social consequences of the single-parent families.

Effects of the Structure of the Labour Market

A decomposition of poverty according to the main activities of the household heads reveals that the incidence of poverty is strongest among the self-employed workers. It should be noted that this category is mainly made up of farmers. According to Kamgnia and Timnou (2000), the spread and the depth of poverty in that group are rather low. Moreover, there is the phenomenon of 'new poverty', that of civil servants whose incomes have been sharply reduced and still remain at low levels. Administrators and skilled employees seem to come out rather very well, given the low poverty incidence for those groups. However, the situation of self-employed workers who employ employees appears rather surprising. The incidence of poverty

among this group is larger than among the labourers whom they employ and pay, while the spread of poverty is almost as large as that among tradesmen. In total, it is the group of tradesmen that is deeply affected if one considers the three poverty indices, P_0 , P_1 , and P_2 .

A Factorial Discriminant Analysis of Poverty

Two cases are considered: (i) a discrimination according to quantitative factors, and (ii) discrimination according to a set of quantitative and qualitative variables. Table 9.6 gives the results of discriminant analysis based on quantitative factors. The tests of difference on mean values are all significant, excepted for the factor defined by ‘number of secondary activities’.

Table 9.6: Discrimination of Households into Poor and Non-poor on the Basis of Quantitative Factors Excluding Total Expenditure

Discriminant Factors	F (1,251) values	Significance	Discriminant Function	
			Standardized	Unstandardized
Number of Working People	23.947	0.000	-0.214	-0.132
Number of Spouses	15.859	0.000	0.047	0.060
Education Expenditure	13.105	0.000	0.364	0.000
Leisure expenditure	11.156	0.001	0.197	0.000
Health Expenditure	10.075	0.002	0.254	0.000
Total Expenditure	23.509	0.000	-0.047	-0.016
Household Size (adult-equivalent)	33.503	0.000	-0.471	-0.169
Number of Secondary Activities	0.318	0.573	0.015	0.021
Income per Adult-equivalent	12.455	0.000	0.244	0.000
Age of Household Head	17.221	0.000	-0.314	-0.023
Constant				1.625

Characteristics of the discriminating function: Eigen value= 0.304; Wilks’ λ = 0.767; Chi-square= 65.538; Degree of freedom= 10; Significance level= 0.000; Values with the barycentres: for the poor= - 0.523; for the non- poor= 0.578; Percentage of correctly classified data= 72.6.

Source: authors’ calculations from the 1996 National Households survey (ECAM).

An evaluation of the discriminant function (columns 4 and 5 of Table 9.6) indicates that poverty factors are: number of working people in the household, number of children, size of the household, and age of the household head (as expressed by the negative sign of their coefficients and the value to the barycentres).

The economic factors seem to be rather different, which is somewhat contradictory to the indications of the analysis of the a priori links. But, one should not ignore the fact that even the poor devote a large part of their income to health and education. These types of expenditure remain higher in absolute terms for the non-poor households.

The inclusion of qualitative factors contributes to increase the level of the Eigen value of the discriminant function, however, without changing the direction of the contribution of the various quantitative factors (Table 9.7). In fact, many qualitative factors were specified in -a first version of the model. But, based on the significance

of the test of differences in mean values, only a sub-set of those variables was considered for the estimations presented in Table 9.7.

Table 9.7: Discrimination Variable of Households into Poor and Non-poor on the Basis of Quantitative and Qualitative Factors

Discriminant Factors	F (1, 113) Values	Significance	Discriminant Function	
			Standardized	Unstandardized
Number of Working Persons	10.988	0.001	0.034	0.025
Number of Spouses	5.620	0.019	- 0.031	- 0.048
Education Expenditure	6.571	0.012	- 0.157	0.000
Leisure Expenditure	6.715	0.011	- 0.205	0.000
Health Expenditure	5.622	0.019	- 0.161	0.000
Number of Children	9.869	0.002	- 0.043	- 0.016
Household Size (adult-equivalent)	14.841	0.000	0.612	0.250
Household Income per Adult-equivalent	4.425	0.038	- 0.145	0.000
Age of Household Head (HH)	4.058	0.046	0.057	0.005
Dummy Variable for Executive HH	4.914	0.029	- 0.017	- 0.038
Dummy Variable for Formal Sector	7.527	0.007	- 0.024	- 0.050
Dummy Variable for Collected Firewood as Source of Fuel	13.183	0.000	0.327	0.687
Dummy Variable for Gas as Sole Source of Fuel	11.505	0.001	- 0.149	- 0.451
Dummy Variable for Self- employed HH with No Employee	10.001	0.002	0.200	0.415
Dummy Variable for Higher Education	5.220	0.024	- 0.082	- 0.277
Constant				- 1.502

Characteristics of the discriminating function: Eigen value= 0.384; Wilks'λ= 0.723; Chi-square= 34.578; Degree of freedom= 15; Significance= 0.003; Values at the barycentres: for the poor= 0.605; for the non-poor= -0.623; Percentage of correctly classified data= 73.7.

Source: authors' calculations from the 1996 National Households survey (ECAM).

In spite of the strong correlation, of more than 50 per cent (see Appendix) among the three variables on the structure of the household (number of children, size of the household, and number of spouses), these three factors were maintained in the subsequent models, in order to allow for a larger degree of freedom in the stepwise analysis. As regard individual factors, university-level education is a factor of the better-off, whereas age of the household head is a factor of poverty. As for family factors, they are such that the size of the household appears to be a factor of poverty, whereas number of spouses and number of children are elements of prosperity. Concerning the employment status of the household head, being an administrator is a sign of prosperity, whereas being independent without employees is a factor of poverty. Moreover, having an activity in the formal sector is a factor of prosperity.

The stepwise discriminant analysis was undertaken, considering the models without and with qualitative variables. The results are presented in Tables 9.8 and 9.9,

respectively. In the first case, Table 9.8, five discriminating factors are identified, the size of the household being the most contributive to poverty and the expenditure on education the most contributive to non-poverty, as indicated by the column of standardized coefficients. In the second case, Table 9.9, only three discriminating factors are identified: size of the household, wood as source of energy, and charcoal as source of energy. All those three variables are contributive to poverty, results that do not seem plausible in the analysis of poverty in Cameroon. However, it was possible to highlight the fact that the size of the household is not only the most representative variable of the structure of the household, but also a factor of poverty, making it a notable incentive for an effective implementation of the policy of responsible parenthood. Moreover, the definition of the need for changing the model of procreation in Cameroon as a control variable in the strategy of poverty reduction calls for campaigns of mass information, education and communication as regards well-being, and thus of the need for a rapid economic recovery.

Table 9.8: A Stepwise Discrimination of Households into Poor and Non-poor on the Basis of Quantitative Factors

Discriminant Factors	Discriminant Function	
	Standardized	Unstandardized
Education Expenditure	0.423	0.000
Leisure Expenditure	0.278	0.000
Household Size (adult-equivalent)	- 0.612	- 0.219
Household Income per Adult-equivalent	0.295	0.000
Age of Household Head	- 0.352	- 0.026
Constant		1.717

Characteristics of the discriminant function: Eigen value= 0.284; Wilks' l= 0.779; Chi-square= 62.296; Degree of freedom= 5; Significance level= 0.000; Values at the barycentres: for the poor= -0.505; for the non-poor= 0.558; Percentage of correctly classified data= 71.5.

Source: authors' calculations from the 1996 National Households survey (ECAM).

Table 9.9: A Stepwise Discrimination of Households into Poor and Non-poor on the Basis of Quantitative and Qualitative Factors

Discriminant Factors	Discriminant Function	
	Standardized	Unstandardized
Household Size (adult-equivalent)	0.647	0.264
Dummy Variable for Collected Firewood as a Source of Energy	0.619	1.320
Dummy Variable for Charcoal as a Source of Energy	1.051	2.205
Constant		- 2.734

Characteristics of the discriminant function: Eigen Value= 0.336; Wilks'l= 0.749; Chi-square= 32.568; Degree of freedom= 3; Significance level= 0.000; values at the barycentres: for the poor= 0.566; for the non-poor= -0.583. Percentage of correctly classified data= 71.4%.

Source: authors' calculations from the 1996 National Households survey (ECAM).

Conclusion

Two facts arise from the foregoing analysis of the determinants of poverty: on the one side are the factors that are clearly linked to poverty. Calorific consumption, which has been used to define the poverty line, is the first discriminant by default: the higher it is, the lower poverty is. Secondly, total expenditure as well as expenditure by items gives the same description of poverty: a low level of expenditure always indicates a high level of poverty. However, the contribution of the various expenditure items reveals facts that are quite different. For some of the items, a value that is low in absolute terms can be high in relative terms and thus reinforce the importance of that component in the budget of the poor, unlike the case of the non-poor.

On the other side, there are factors whose link with poverty is determined by the analysis. A high fertility causes poverty; households headed by women are better off than the others; households headed by older people are poorer; and single-parent households have a better standard of living. Each one of these results calls for a specific policy as regards poverty reduction. But the decision is not so straightforward. For example, it would not be easy to make recommendations based on the prosperity of single-parent households and that of households headed by women. It is indeed necessary to take into account social and economic consequences of the increasing evolution of that category of the population.

The discriminant analysis provides some interesting discriminating functions. The most revealing, undoubtedly, is the result of the stepwise analysis that the significant discriminant factors are some of the expenditure items (education and health), size of household, age of household head and some categories of source of energy used by the household. Whereas economic factors such as expenditures are factors of prosperity family-based factors such as size of household and number of children are factors of poverty.

References

- Amin, Aloysius Ajab and Jean-Luc Dubois, 1999, *An Update of the Cameroon Poverty Profile: Reducing the Current Poverty and Tempering the Increase in Inequality: A World Bank Study*, Washington, DC: World Bank.
- Asselin, L.M. and A. Dauphin, 2001, *Poverty Measurement: A Conceptual Framework*, reference document for the Poverty Workshop, 5–19 January, Accra.
- Banque Mondiale, 1994, *l'Ajustement en Afrique: Réformes, Résultats et Chemin à Parcourir*, rapport sur les politiques de développement, Washington, DC Banque Mondiale.
- Bekolo-Ebe, B., 1986, 'Rétrospective d'une décennie de croissance de l'Économie Camerounaise: 1975-1986', *Revue Camerounaise de Management*.
- Cameroun/MINEFI/DSCN, 1996, *Enquête Camerounaise auprès des ménages (ECAM)*, Vol. 1: *Méthodologie* (tomes 1 et 2), Yaoundé.
- Cameroun/MINEFI/DSCN, 1997, *Enquête Camerounaise auprès des ménages (ECAM)*, Vol. 2: *Résultats* (tomes 1 et 2: 81 pages; tomes 3, 4 et 5: 95 pages), Yaoundé.
- Cordoso, N. et F. Gardes, 1996, 'Caractérisation et Analyse du Comportement des Ménages Pauvres sur Données Individuelles Françaises', *Revue Économique*, Vol. 47, No. 3, pp. 687–98.

- DEMO 87, 1992, *Vol. III: Analyse préliminaire*, Tome 9: Synthèse des rapports préliminaires, Yaoundé.
- Duclos, J.Y., 2001, *Poverty Measurement and Public Policy*, reference document for the Poverty Workshop, 5–19 January, Accra.
- Fambon, S. et al., 2000, *Réformes économiques et pauvreté au Cameroun durant les années 1990*, rapport projet collaboratif sur la pauvreté, CREA, Nairobi.
- Förster, M.F., 1995, 'Bas Revenus et Pauvreté: une Comparaison Internationale', *Problèmes Économiques*, No. 2, 413.
- Foster, J., J. Greer and E. Thorbecke, 1984, 'A Class of Decomposable Poverty Measures', *Econometrica*, Vol. 52, No.1.
- Gourieroux, Ch., 1989, *Économétrie des Variables Qualitatives*, 2^{ème} édition, Paris: Economica.
- Greer, J. and E. Thorbecke., 1986, 'A Methodology for Measuring Food Poverty Applied to Kenya', *Journal of Development Economics*, No. 24, pp. 59–74.
- Greffe, X., 1994, *Economie des Politiques Publiques*, Paris: Précis Dalloz.
- Jambu M., 1989, 'Exploration informatique et statistique des données', Coll. DUNOD, Paris: DUNOD.
- Kamgnia, D.B., 1997, *Contribution à l'Élaboration d'une Réforme Douanière Optimale en Zone UDEAC: cas du Cameroun*, Rapport Définitif, Réseau sur les Politiques Industrielles en Afrique, Dakar: CODESRIA.
- Kamgnia, D.B. et J.P. Timnou, 2000, *Pauvreté au Cameroun: Evolution dans une conjoncture d'ajustement économique*, Rapport Final, projet CREA, Nairobi.
- Kanbur, R.S.M., 1987, 'Measurement and Alleviation of Poverty: With an Application to the Effects of Macroeconomic Adjustment', *IMF Staff Papers*, pp. 60–85.
- Lebart L., A. Morineau et M. Piron, 1995, *Statistiques exploratoires multidisciplinaire*, Coll. DUNOD, Paris: DUNOD.
- Lynch, S.G., 1991, *Income Distribution, Poverty and Consumer Preferences in Cameroon*, New York: USAID/Cornell University.
- OIT, 1986, *Promotion de l'Emploi Rural et Développement des PME/PMI au Cameroun*.
- Pilon M. et al., 1993, *Du ménage à la société domestique*, Paris.
- Prescott, N. and M. Pradhan, 1997, *A Poverty Profile for Cambodia*, World Bank Discussion Paper No. 373, Washington, DC: World Bank.
- Schneider-Bunner, Cl., 1997, *Santé et justice sociale : l'économie des systèmes de santé face à l'équité*, Paris: Economica.
- Sen, A.K., 1980, 'Inequality of What?' In: A.K. Sen, 1982, *Choice, Welfare and Measurement*, Oxford: Basil Blackwell.
- Sen, A.K., 1990, 'Justice: Means versus Freedom', *Philosophy and Public Affairs*, Vol. 19, No. 2, pp. 111–21.
- Sen, A.K., 1992, *Inequality Reexamined*, Cambridge, MA: Harvard University Press.
- Streeten, P. et al., 1981, *First Things First: Meeting Basic Human Needs in the Developing Countries*, Oxford: Oxford University Press.
- Timnou, J-P., 1994, 'Dimension Sociale de l'Ajustement au Cameroun: l'Exclusion du Monde Rural'. In: G. Courade, éd., *le Village Camerounais à l'Heure de l'Ajustement*, Paris: Ed. Khartala.
- Valtriani, P., 1994, 'La Notion de Pauvreté: des Frontières Floues', *Problèmes Économiques*, No. 2, 386.
- Wolf, S., 1981, *Concepts and Measurement of Poverty*, United Nations: United Research Institute for Social Development.

Appendix

Table 9A.1: Matrix of Correlations

Variables	Size	Income	Calorie	Spouse	Child	Occupied	Activity	age	Cost	Room	Property	Feeding	Health	Leisur.	Education	Expendit.
Size	.00															
Income	.11	1.00														
Calorie	-.23	.18	1.00													
Conjoints	.62	.04	-.15	1.00												
Children	.82	.03	-.17	.56	1.00											
Occupied	.55	.03	-.22	.45	.40	1.00										
Activity	.17	.07	.01	.03	.10	.05	1.00									
Age	.32	-.02	-.11	.27	.29	.26	.14	1.00								
Cost	.00	.07	.05	.01	-.01	-.01	-.02	-.04	1.00							
Rooms	.45	.05	-.13	.31	.34	.34	.06	.32	.00	1.00						
Property	.12	.06	-.05	.09	.13	.10	.02	.01	.00	.09	1.00					
Feeding	-.31	.31	.68	-.21	-.26	-.24	-.01	-.22	.12	-.17	.01	1.00				
Health	-.10	.15	.18	-.09	-.09	-.11	.05	.03	.20	-.04	-.04	.21	1.00			
Leisure	-.12	.26	.21	-.11	-.13	-.08	.03	-.13	.08	-.08	-.01	.43	.11	1.00		
Education	.03	.29	.26	-.09	.03	-.13	.09	-.03	.05	-.02	.00	.31	.24	.18	1.00	
Expendit.	-.25	.41	.54	-.18	-.23	-.22	.02	-.17	.16	-.03	.01	.84	.43	.48	.49	1.00
Variables	Size	Income	Calorie	Spouse	Child	Occupied	Activity	age	Cost	Room	Property	Feeding	Health	Leisur.	Education	Expendit.

Size= size of the household in adult-equivalent; Calorie= calories consumed per day per adult-equivalent; Spouse= number of spouses; Children= number of children in the HH; Occupied= number of working persons in the HH; Activity= number of secondary activities; Age= age of the HHH; Cost= cost of the last medical consultation; Rooms= number of rooms in the house; Property= number of property owned; Feeding= food expenditure per adult-equivalent; Health= health expenditure per adult-equivalent; Leisure= leisure expenditure per adult-equivalent; Education= expenditure on education per adult-equivalent; Expenditure= total expenditure per adult-equivalent.

Source: World Bank, 1995, *Cameroon: Diversity, Growth and Poverty Reduction*, Report No. 13167.

An Analysis of Household Attitudes toward the Purchase of Livestock Products and Fish in Cameroon

Emmanuel N. Tambi

Introduction

In Africa, market-oriented livestock production is an important focus for smallholder livestock development and has a good potential for contribution to economic development. Realising this potential depends on a steady market for livestock products and an increase in production. The extent to which livestock producers will increase production, however, depends on how they perceive demand for their products. In the Republic of Cameroon, it has been shown that one of the factors limiting intensification of livestock production is inadequate information on market demand for specific livestock products (MINEPIA 1993). For producers to ensure a steady supply of livestock products to the Cameroonian market, a better understanding of household consumption behaviour is needed. This requires that those factors that influence household attitudes toward purchases of the products be identified and their effects quantified. From the estimated effects, household profiles can be constructed as a basis for predicting demand for each product.

This study addresses the need for additional information on household demand for meat and fish in Cameroon. Specifically, it uses probit analysis to evaluate the effects of individual and socio-economic factors that influence the attitudes of households toward the purchase of beef, chicken, pork and fish in Cameroon. Implications drawn from the findings should be useful to livestock producers as they attempt to target specific segments of the population and expand their markets.

Following this introduction, there is a description of meat and fish consumption patterns in Cameroon. Previous related research on household demand for livestock products is then reviewed. The analytical model is specified along with data requirements. Next, results and discussion are provided, followed by conclusions and implications.

Meat and Fish Consumption Patterns

Cameroonians consumed a total of 217,000 metric tonnes (MT) of meat in 1998, of which 98 per cent was from domestic production and the remaining 2 per cent was imported. Beef is the most important meat consumed, followed by mutton and goat meat, pork and poultry in that order. Other meats, including offal and game meat, are also important and account for more than one-fifth of total meat consumption (Table 10.1). Total meat consumption increased by 80 per cent (4.4 per cent per year) from 1980 to 1998. The largest absolute increase of more than 40,000 MT was in beef consumption. Poultry meat consumption increased by more than three times while mutton and goat meat consumption more than doubled during the same time period. Meat consumption in Cameroon varies by province. In 1995, for example, households in the Centre and Littoral Provinces consumed 43 per cent of total beef while those in the Adamaoua, North and Far North Provinces accounted for 27 per cent. Households in the West and Northwest Provinces consumed 18 per cent of the total beef while the remaining quantity went to the East and Southwest Provinces (MINEPIA 1996).

Table 10.1: Total and Per Capita Consumption of Meat and Fish in Cameroon, 1980–98

Product	1980	1985	1990	1995	1998	% change, 1980–98
Total Consumption (1,000 MT)						
All Meats	120.7	162.3	183.3	201.4	217.0	80.0
Beef	49.7	69.2	74.6	83.3	89.6	80.3
Poultry	7.9	20.1	18.6	20.9	26.6	236.7
Pork	14.8	16.5	18.0	20.0	19.8	33.8
Mutton & Goat Meat	14.8	15.2	27.0	30.6	31.1	110.1
Other Meats	33.5	41.3	45.1	46.6	49.9	48.9
Fish	104.3	140.0	139.7	139.6	128.6	23.3
Per Capita Consumption (kg)						
All Meats	14.0	6.3	16.0	15.3	15.2	8.6
Beef	5.7	6.9	6.5	6.3	6.3	10.5
Poultry	0.9	2.0	1.6	1.6	1.9	111.1
Pork	1.7	1.6	1.6	1.5	1.4	-17.6
Mutton & Goat Meat	1.7	1.5	2.4	2.3	2.2	29.4
Other Meats	4.0	4.3	3.9	3.6	3.4	-15.0
Fish	12.1	14.0	12.2	10.6	9.0	-25.6

Source: Food and Agriculture Organization, Production Yearbook, 1998 and previous years.

While total meat consumption grew more rapidly for each of the different types of meats consumed in Cameroon, growth in per capita consumption was less rapid during the period 1980–98. The per capita consumption of all meats increased by only 1.2 kg during this period. Like total consumption, per capita consumption of

poultry meat also increased rapidly, more than doubling from 1980 to 1998. Beef, mutton and goat meat increased by about 10 and 30 per cent, respectively (Table 10.1). Not all meats, however, witnessed an increase in per capita consumption. Per capita consumption of pig meat and other meats decreased by 18 and 15 per cent, respectively. Almost all of the increase in per capita consumption of all meats occurred from 1980 to 1988 after which consumption began to decrease, mainly owing to a ban on meat imports instituted in the later part of 1988. Following the ban, per capita imports of beef and poultry dropped from 1.2 kg in 1985 to 0.1 kg in 1990.

Total consumption of fish in Cameroon increased by more than 24,000 MT from 104,300 MT from 1980 to 1998 (Table 10.1). Unlike total meat consumption, total fish consumption only increased from 1980 to 1985, declining continuously thereafter. Although per capita consumption shows a similar pattern, overall per capita consumption dropped by about 25 per cent from 12 kg in 1980.

The important implication of the changes in consumption patterns for meat and fish in Cameroon is that a strong demand, driven by increasing urbanization and income growth, would encourage smallholder livestock development. How much of this will occur, however, will be conditioned by the changes that take place in household socio-economic circumstances.

Previous Research

Demand analyses of livestock products in Cameroon have been limited both in number and scope. Studies on household demand for livestock products and fish by Tambi (1998, 1996); Atouga (1992); Njinkue (1992); Tambi and Vabi (1991); and Holtzman (1988) virtually exhaust the literature. Using a complete AIDS (Almost Ideal Demand System) model incorporating habit formation with and without homogeneity imposed on the system, Tambi (1998) analysed the consumption patterns of meat, fish and dairy products in Cameroon. The results classified meat and dairy products as relative luxuries and fish as a relative necessity. Changes in money income were shown to significantly influence budget shares for meat and fish but not dairy products. The study by Tambi (1996) employed static and dynamic demand models to estimate household demand for beef with specific concern for the short- and long-run price and income effects, and the period of adjustment for habit formation. Household income, lagged consumption, own and cross prices were jointly important in explaining beef consumption behaviour in Cameroon. Atouga's (1992) study focused on the impact of import taxation on meat consumption under various scenarios of price change. For a 15 per cent tax increase in the price of meat, budget shares allocated to meat decreased by 1.9 per cent, resulting in an annual per capita decrease in consumption of 3.4 kg by each low-income household. While Holtzman's (1988) study of beef consumption in northern Cameroon concentrated principally on the effects of price policy distortions, Njinkue's (1992) focus was on household food consumption behaviour in Cameroon. His analysis of data from a household consumption survey led to the conclusion that fish was an inferior good, of which low-income households increased consumption while high-income households reduced consumption.

Several studies conducted in other places than Cameroon have demonstrated that demographic and socio-economic factors are important explanatory factors in household consumption behaviour. Using a moment-generating function to estimate the effects of income changes on demand for livestock products in the United States, Hahn (1988) found beef to be a normal good while pork and chicken were inferior goods. Applying a dynamic linear expenditure system to time series data for 22 sub-groups of commodities in Japan, Sasaki and Fukagawa (1987) found the consumption of fish to be significantly affected by changes in own price and the cross price of meat. In Korea, Ingco (1990) reported budget shares to be strongly responsive to changes in food prices, with beef being a relative luxury good while pork, chicken and fish were relative necessities. By incorporating habit and urbanization parameters in the almost ideal demand system (AIDS) model, Ingco found that consumption of beef, pork and chicken were influenced by changes in habit while the effect of urbanization was to decrease expenditures on fish and increase expenditures on beef, pork and chicken.

Using probit and truncated regression coefficients, Popkin et al. (1989) simulated the probabilities of women consuming low-, medium- and high-fat meat and poultry products given changes in a set of demographic and socio-economic characteristics. The results showed that for women with average characteristics, the probability of consuming low-fat red meat increased from 0.23 in 1977 to 0.39 in 1985 while the probability of consuming high-fat red meat decreased from 0.68 to 0.24 during the same period. A study by Capps et al. (1988) also employed probit analysis to test hypotheses that individual, demographic and psychographic characteristics influenced consumer decisions to try lean meat products. The conclusions were that age, residency, education, household size and predisposition to buying low-fat foods were important factors affecting consumer decisions. Another study by Cheng and Capps (1988) reported expenditures on fishery products to be more sensitive to changes in household size than to changes in income. However, the cross-price effects between beef and poultry were not statistically significant in that study. In estimating demand relationships for meat, cereals, vegetables and other food and non-food items in Burkina Faso, Savadogo and Brandt (1988) found price, income and household composition, education, marital status and urbanization to jointly influence household expenditure allocations. In Sierra Leone, Strauss (1983) used survey data from King and Byerlee's (1977) study to estimate a household-firm model for five food items. Results revealed that even though consumption of fish and animal products increased with income, average expenditure shares of fish and animal products decreased for high-expenditure goods.

The weakness of the household consumption studies conducted in Cameroon is that they do not address the problem of sample selection bias, a problem commonly encountered in analysis involving survey data. In household consumption studies that use cross-sectional survey data, it is possible that households making food purchases at any one time are a non-random subset of all potential buyers in the market. If this is the case, ordinary least squares (OLS) estimation may provide estimates that

are biased and inconsistent. For example, Cheng and Capps (1988) have found sample selection bias as a factor having a significant effect on estimates for fish consumption in the United States. In order to provide consistent and efficient estimates, probit analysis has been used in this study along with the Heckman two-step procedure to correct for any possible sample selection bias. The procedure produces a correction term that is incorporated in the final estimating equation to measure the degree of selectivity bias.

Methodology

Model and Estimation

Analyses of consumption data obtained from cross-sectional surveys that involve expenditure/income (Engel) relationships often encounter binary responses because of the categorical nature of the decisions made by household heads. As pointed out by Cheng and Capps (1988), household heads do not face the same prices at the same time, preferences for a particular commodity are not usually the same across households and some households may have sufficient inventories such that further purchases may not be necessary. If a commodity is narrowly defined and the survey period is relatively short, the consequence is that some households report no expenditures for the commodity. To fulfil household food needs, a household head is confronted with a marketing decision to which he/she reacts positively by making a purchase (expenditure) or negatively by not making a purchase (no expenditure). When no expenditure is incurred, the response takes on a single value of zero amounts spent on consumption. When expenditure is incurred, however, the observation takes on the characteristic of a continuous variable such as the amount spent on consumption. The resulting effect of these responses is a limited dependent variable that is partly qualitative and partly quantitative.

The traditional methods used in this type of analyses have been OLS or Tobit analysis if a large proportion of households decide to make no purchases. Because of the discrete nature of such decisions, however, qualitative choice models are a useful analytical tool. The models include the probit model (Anim and Lyne 1994; Capps et al. 1988; Fletcher and Terza 1986), the logit model (Jones et al. 1989; Press and Wilson 1978), and the linear probability model (Falusi 1976). These models use different distributional assumptions to determine the probability that Y_i is 0 or 1. However, the linear probability model has three important weaknesses: the error term may exhibit properties of heteroscedasticity; it may also possess elements of non-normality; and the predicted value of the dependent variable may fall outside the unit interval. Jones et al. (1989) show that while generalized least squares (GLS) may circumvent the problem of heteroscedasticity, truncating the value of the dependent variable through logit analysis does not resolve the problem. Probit is used in this study for a number of reasons. First, probit has the ability to generate bounded probability estimates for each observation (Anim and Lyne 1994). Secondly,

the probit estimator assumes that the underlying error term follows a normal distribution, which is the same distributional assumption typically made for continuous variables.

The probit model which was estimated for fish and three livestock products – beef, chicken and pork – was specified as follows:

$$Y_{zj} = \alpha_j + \beta_j \sum_{k=1}^s X_{zjs} + e_{zj} \quad (1)$$

where the X_{zjs} are vectors of s explanatory variables of the j^{th} household purchasing the z^{th} product, and Y_{zj} is a vector of binary variables such that $Y_{zj} = 1$ if the j^{th} household purchases the z^{th} livestock product and 0 otherwise. In the model, the X_{zjs} are assumed to be stochastic and independent of the zero mean random variable e_{zj} . Since Y_{zj} can only assume two different values for each z product, 1 or 0, the expected probability can be defined as follows:

$$\begin{aligned} E(Y_{zj}) &= E[\alpha_j + \beta_j \sum_{k=1}^s X_{zjs} + e_{zj}] \\ &= \alpha_j + \beta_j \sum_{k=1}^s E(X_{zj}) \end{aligned} \quad (2)$$

Equation (2), which defines the proportion of households with characteristics (X_{zj}) likely to purchase a given livestock product, can further be written as:

$$E(Y_{zj}) = 0 < \alpha_j + \beta_j \sum_{k=1}^s X_{zjs} < 1 \quad (3)$$

such that the larger the proportion, the more likely it is that a decision to purchase a product will be made and vice versa.

The empirical model is specified as follows:

$$\begin{aligned} \text{EXP}_{zj} &= \beta_0 + \beta_1 \ln(\text{PB}_{zj}) + \beta_2 \ln(\text{PC}_{zj}) + \beta_3 \ln(\text{PP}_{zj}) + \beta_4 \ln(\text{PF}_{zj}) \\ &\quad + \beta_5 \ln(\text{IN1}_{zj}) + \beta_6 \ln(\text{IN2}_{zj}) + \beta_7 \ln(\text{IN3}_{zj}) + \beta_8 \ln(\text{HS}_{zj}) \\ &\quad + \beta_9 (\text{AG1}_{zj}) + \beta_{10} (\text{AG2}_{zj}) + \beta_{11} (\text{ED1}_{zj}) + \beta_{12} (\text{ED2}_{zj}) \\ &\quad + \beta_{13} (\text{ED3}_{zj}) + \beta_{14} (\text{OC1}_{zj}) + \beta_{15} (\text{OC2}_{zj}) + \beta_{16} (\text{OC3}_{zj}) \\ &\quad + \beta_{17} (\text{R1}_{zj}) + \beta_{18} (\text{R2}_{zj}) + \beta_{19} (\text{MR1}_{zj}) + \varepsilon_{zj} \end{aligned} \quad (4)$$

where variables are as defined in Table 10.2. The dependent variable is household purchasing decisions as defined by equation (1). The explanatory variables comprised both the continuous and binary variables. A priori, the following variables are hypothesized as a positive function of household purchases of livestock products: IN_{zj} , HS_{zj} , ED2_{zj} , ED3_{zj} , HS3_{zj} , OC1_{zj} , OC2_{zj} , OC3_{zj} , and MR_{zj} . The variables PB_{zj} , PC_{zj} , PP_{zj} , PF_{zj} , AG1_{zj} , AG2_{zj} , and ED1_{zj} are expected to be negatively related to household purchases whereas the variables RE1_{zj} and RE2_{zj} could be positively or negatively related to household purchases.

Table 10.2: Description of Variables

Variable	Type	Description
EXP _{zj}	Binary	1 if the j th household purchases the z th livestock product, 0 otherwise
PB _{zj}	Continuous	Price of Beef in Francs CFA per kg
PC _{zj}	Continuous	Price of Chicken in Francs CFA per kg
PP _{zj}	Continuous	Price of Pork in Francs CFA per kg
PF _{zj}	Continuous	Price of Fish in Francs CFA per kg
IN1 _{zj}	Binary	1 if household monthly income is less than 80,000 FCFA, 0 otherwise
IN2 _{zj}	Binary	1 if household monthly income is between 80,000 and 150,000 FCFA, 0 otherwise
IN3 _{zj}	Binary	1 if household monthly income is between 150,000 and 300,000 FCFA, 0 otherwise
IN4 _{zj}	Binary	Omitted category for households with monthly incomes in excess of 300,000 FCFA
HS _{zj}	Continuous	Household size defined as number of persons residing in and eating from the same house
AG1 _{zj}	Binary	1 if household head is between 25 and 50 years, 0 otherwise
AG2 _{zj}	Binary	1 if household head is above 50 years, 0 otherwise
AG3 _{zj}	Binary	Omitted category for household heads less than 25 years old
ED1 _{zj}	Binary	1 if household head has no formal education, 0 otherwise
ED2 _{zj}	Binary	1 if household head has completed primary school, 0 otherwise
ED3 _{zj}	Binary	Omitted category for household heads with education above high school
ED4 _{zj}	Binary	1 if household head has completed secondary or high school, 0 otherwise
OC1 _{zj}	Binary	1 if household head is engaged in farming, 0 otherwise
OC2 _{zj}	Binary	1 if household head is employed in the public service, 0 otherwise
OC3 _{zj}	Binary	1 if household head is engaged in business or commerce, 0 otherwise
OC4 _{zj}	Binary	Omitted category for unemployed or retired household heads
RE1 _{zj}	Binary	1 if household head is of the Christian faith, 0 otherwise
RE2 _{zj}	Binary	1 if household head is of the Muslim faith, 0 otherwise
RE3 _{zj}	Binary	Omitted category for household heads affiliated with other religious faiths
MR1 _{zj}	Binary	1 if household head is married, 0 otherwise
MR2 _{zj}	Binary	Omitted category for unmarried household heads

Source: author's calculations.

Equation (4) was estimated using the maximum likelihood (ML) command of the SHAZAM econometric computer program (White et al. 1993). ML estimation maximizes the value of the probability density function $f(X, \beta)$ and assumes normality of the disturbance term (Kmenta 1971). ML estimates therefore are² consistent and asymptotically normally distributed. The b coefficients determine the changes in the probability of purchasing a particular livestock product given a unit change in the explanatory variable.

Estimating Marginal Probabilities

Generally the non-linearity feature of probit analysis precludes one from directly interpreting the values of the coefficients as the marginal effects of the explanatory variables. This is best done through marginal probability analysis. Marginal probability analysis measures the change in the probability of a favourable response toward the purchase of a product given a unit change in a continuous variable, *ceteris paribus*.

For such variables, derivatives of the probability function are evaluated at their mean values. The marginal probability is calculated as the product of the coefficient estimate (β_j^*) and the standard probability density function $n(X_j\beta_j^*)$ of the probit evaluated at the mean values of the explanatory variables. For dichotomous explanatory variables with a value of zero or one, the marginal probability was calculated as the difference between $n(X_j\beta_j^*)$ for $X_j = 0$ and $n(X_j\beta_j^*)$ for $X_j = 1$ in the case of the discrete variable.

Testing for Selectivity Bias

In household consumption studies involving binary responses, it is possible that consumption preferences may not be uniform across households. Consumption habits formed over the years may not allow an instantaneous shift from one product to another. It is also possible that consumers making consumption decisions at any one time are a non-random subset of all potential consumers, in which case survey data may be subject to significant sample selection bias (Cheng and Capps 1988; Maddala 1983). Direct application of OLS to a probit model using such data provides estimates that are biased and inconsistent. An estimation method that circumvents this problem has been provided by Heckman (1976). The method involves a two-step estimation procedure. In the first step, probit was applied to all observations with the dependent variable taking a value of 1 for households that made decisions to purchase a livestock product and 0 otherwise. In this first step, a variable (EC_{zj}) was generated as the inverse of Mill's ratio using the IMR= option of the SHAZAM econometric computer program. EC_{zj} is defined as follows:

$$f(X\beta)/F(X\beta) \text{ for EXP} = 1 \text{ and} \quad (5)$$

$$f(X\beta)/(F(X\beta)-1) \text{ for EXP} = 0 \quad (6)$$

where $f(\cdot)$ is the standard normal density function and $F(\cdot)$ is the cumulative standard normal density function (Maddala 1983; Heckman 1976). In the second step, EC_{zj} was included in the original model as an explanatory variable as follows:

$$EXP_{zj} = \alpha_j + \beta_j \sum_{k=1} X_{zjs} + \beta_j(EC_{zj}) + \epsilon_{zj} \quad (7)$$

where EXP_{zj} is as previously defined, X_{zjs} are other explanatory variables defined in equation (4) and EC_{zj} is an error correction variable that measures the degree of selectivity bias in the sample. With the correction term, OLS is applied to equation (7).

Data

The data used in this study were collected during the 1992/93 USAID/CAPP (United States Agency for International Development/Cameroon Agricultural Policy and Planning project) Household Meat and Fish Consumption Survey (HMFCS) in Cameroon. The aim of the survey was to establish household expenditure patterns for livestock and fishery products and to quantify socio-economic factors likely to

influence household demand for these products. The HMFCS selected households from stratified area probability samples in the ten provinces of Cameroon (see MINEPIA 1993 for further details on the sampling procedure). The structured questionnaire used in the HMFCS contained questions on whether households purchased any of the livestock and fishery products during the week proceeding the survey week. For those who made purchases, they were further required to provide information on quantities purchased of each product, expenditures incurred and prices paid. In addition, they were required to provide information on personal and household characteristics (income, household size, age, education, religious affiliation, occupation and marital status) as well as preferences for each product.

This study analysed the data collected from 438 households in the Western region of Cameroon. The region has a population of 2.2 million inhabitants, 39 per cent of whom live in urban areas (MINPAT 1987). It accounts for 38 per cent of the total national production of pork, 27 per cent of poultry, 16 per cent of beef and less than 5 per cent of lamb and mutton (MINEPIA 1986). Out of the total number of households interviewed in the Western region, questionnaires with missing values for relevant variables were omitted from the analysis. Overall, relevant data used in the analysis came from 88 per cent of the households who purchased fish, 68 per cent for beef, 55 per cent for chicken and 51 per cent for pork. Because of the limited number of households that purchased lamb and mutton and the large number of missing data for related variables, lamb and mutton were omitted from the analysis.

Table 10.2 above shows the description of the variables used in the analysis while descriptive statistics for relevant variables are provided in Table 10.3. The age of the household head did not vary much ($CV = 9.6$ per cent) from the average age of 41 years, and each household head had approximately six years of formal education. The household size was large, averaging eight persons. Household monthly income ranged from 18,000 FCFA (US\$ 36.0) to 650,000 FCFA (US\$ 1,300.0), with 38 per cent reporting monthly incomes below 80,000 FCFA (US\$ 160.0) compared to only 4 per cent with incomes exceeding 300,000 FCFA (US\$ 600.0). Average expenditures on beef were greater than expenditures on the other products. Variation in expenditures was highest for chicken and lowest for fish. Average prices paid per kg varied more widely for pork than for the other products.

Results and Discussion

Maximum likelihood and OLS estimates of factors that influence household decisions to purchase beef, pork, poultry and fish in Cameroon were derived using a two-step estimation procedure of the probit model. The results were used to predict the probability that a household with a certain set of characteristics would purchase any of the four products considered. The estimates and marginal probabilities are presented for each of the products analysed.

Table 10.3: Descriptive Statistics for Continuous Variables Influencing Household Purchases of Livestock Products and Fish in Cameroon

Variable	Number of Cases ¹	Mean	Coefficient of Variation (%)	Minimum	Maximum
Average Monthly Household expenditures on (FCFA/month)					
Beef	298	5,810	62.6	3,400	16,500
Chicken	242	3,875	82.3	1,100	24,300
Pork	225	2,490	43.6	850	6,600
Fish	385	5,120	13.0	2,700	13,800
Average Price Paid per kg of (FCFA/kg)					
Beef	298	548	16.1	450	1,225
Chicken	242	776	33.5	400	1,640
Pork	225	630	38.1	470	1,100
Fish	385	343	12.2	270	650
Average Monthly Household Income within this Income Bracket (FCFA)					
< 80,000	166	36,400	22.9	18,000	78,950
80,000 to 150,000	103	104,290	20.1	80,500	150,000
150,000 to 300,000	52	182,755	19.8	154,900	300,000
> 300,000	17	412,665	49.5	308,00	650,000
Years of Formal Education	296	6.4	14.2	0	17
Average Age of Household Head within this Age Bracket (years)					
< 25	34	23	15.2	20	25
25 to 50	216	39	4.6	26	48
>50	68	54	11.8	51	73
All Age Groups	318	41	9.6	20	73
Household Size (no.)	368	8.4	11.4	2	13

¹ Total number of cases = 438.

Source: author's calculations.

Empirical Probit Estimates

Results for each of the four products appear in Table 10.4 as maximum likelihood estimates of the probit model. The goodness-of-fit as measured by the McFadden R^2 s show that the choice of explanatory variables included in the probit model explains the variation in decisions to purchase fish, beef and chicken better than the variation in decisions to purchase pork. The likelihood ratio tests indicate that the slope coefficients are significantly different from zero at $P < 0.05$ for each of the four products.

All the own-price coefficients agree with a priori expectations. This means that an increase in the prices of meat and fish would impact negatively on a household's decision to purchase these products. An increase in the price of chicken, for example, would reduce both its purchase and that of beef. The complementarity between beef and chicken is also common between beef and pork as well as between fish

and chicken. However, fish appears as a close substitute to beef, as is the case with chicken and pork.

Table 10.4: Maximum Likelihood Estimates of Factors Influencing Household Decisions to Purchase Beef, Chicken, Pork and Fish in Cameroon Obtained in the First Stage of the Probit Model

Variable	Beef		Chicken		Pork		Fish	
	Coef.	Marginal Prob.	Coef.	Marginal Prob.	Coef.	Marginal Prob.	Coef.	Marginal Prob.
PBzj	-	-0.272	-0.102		-0.034*	-0.201	0.581*	0.158
	0.040**							
PCzj	-0.004*	-0.150	-	-0.158	0.030		0.519	
	0.013**							
PPzj	-0.103		0.303*	0.254	-	-0.045	0.683	
					0.009**			
PFzj	0.300*	0.177	-0.001		0.182		-0.031*	-0.189
IN1zj	-0.037		-0.003		-0.016		0.253*	
IN2zj	0.342**		-0.212*		0.078*		0.089**	
IN3zj	0.005		0.047*		0.121		-0.086**	
HSzj	-0.009*	-0.263	-0.097*	-0.305	-0.338*	-0.370	0.001**	0.003
AG1zj	-0.083		0.591		-0.308		-0.190	
AG2zj	0.375*		-0.074*		0.045*		0.212**	
ED1zj	-0.322		-0.161		-0.334		0.189*	
ED2zj	-0.197*		0.019		0.046		0.034*	
ED3zj	0.010**		0.115		0.175		-0.026	
OC1zj	0.124		-0.223		-0.095		0.243	
OC2zj	-0.177		0.041*		0.089*		-0.067**	
OC3zj	0.296		0.025*		0.004*		0.069	
RE1zj	-0.069*		0.066		0.338		0.463**	
RE2zj	0.074*		0.002		n.a.		-0.086**	
MR1zj	0.174*		-		0.174		-0.037	
			0.080**					
Intercept	0.757		-0.355		-0.460		2.021	
Likelihood	126.007		142.312		74.238		151.156	
Ratio Test								
McFadden	0.635		0.592		0.510		0.657	
R ²								

* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

Source: author's calculations.

These results are in line with previous household consumption patterns, which indicate that beef and chicken consumption in Cameroon increased with a reduction in price. Rapid growth in meat consumption in Cameroon occurred during the 1980s, mainly owing to increased imports of cheaply subsidized meats from Europe. Meat imports increased from 1,500 MT in 1980 to 14,300 MT in 1985. By mid-1988 over 18,000 MT of meat (mostly chicken and beef) were imported into Cameroon. In 1980, the average import prices of beef and chicken were 505 FCFA/kg

(US\$1.65) and 775 FCFA/kg (US\$2.53), respectively. In 1985, the respective prices had dropped to 234 FCFA/kg and 260 FCFA/kg. With the imposition of a tax on meat imports in 1988, prices of imported meat went up, discouraging consumption. By 1990 the price of imported beef was 810 FCFA/kg (US\$2.20) while the price of chicken was 1,360 FCFA/kg (US\$3.70). As a consequence, chicken consumption dropped from 20,100 MT in 1985 to 18,600 MT in 1990. At the time of this survey in 1992, the average prices of domestic beef and chicken were 548 FCFA/kg and 776 FCFA/kg, respectively.

The variable for the low-income category (IN1) is statistically significant for fish only; this implies that an increase in the income levels of households within this income category would have a positive effect on their decisions to purchase fish but not beef, chicken and pork. For middle-income households (IN2), an increase in their money incomes would have a larger positive effect on their decisions to purchase beef than it would on their decisions to purchase pork and fish. For households classified as high-income, the effect of an increase in money income is to enable them to purchase more chicken and less fish. Thus, fish is an inferior good while chicken is a normal good to these households. These results show that while high-income households in Cameroon place a high premium on chicken rather than on fish, the decisions of low-income households to consume beef, chicken and pork are constrained by inadequate income. These findings are corroborated by earlier findings, which reveal that over time an increase in income led to higher budget shares devoted to meat in Cameroon (Tambi 1998).

The size of a household is an important determinant of its food consumption decisions. The effect of an additional household member is to reduce the likelihood that it will purchase beef, chicken and pork, but will increase its purchase of fish. Age is an important determinant of food consumption decisions only for households headed by older persons. For these households, however, chicken is not particularly favoured, probably because of the relatively high price of chicken compared to the other products. Apart from fish and beef, education does not seem to significantly influence the decisions of households to purchase chicken and pork. Households headed by more educated persons are more likely to purchase beef than any of the other products; a fact that could be attributed to their ability to recognize the importance of beef as a high protein source. Household heads employed in either the public sector or who are engaged in business activities have a greater likelihood to purchase chicken and pork than they would purchase beef and fish. Within the Cameroon context, the case of chicken is understandable since it is regarded as a luxury good (particularly for high-income households) and therefore should be consumed by households with a steady income.

Apart from explaining household choice decisions for meat and fish in Cameroon, the probit estimates help in calculating the marginal effects of a one-unit change in an explanatory variable on the probability that a household head would purchase a product, holding constant all other variables at their mean level. The effects appear in Table 10.4 as marginal probabilities (MPs) calculated only for those continuous

variables with statistically significant coefficients. As shown by Green (1990), MPs computed for binary variables are meaningless and therefore cannot, strictly, be compared with those computed from continuous variables. From the MPs in Table 10.4, an additional household member, for example, will have a small but positive impact on the probability of that household to purchase fish. Similarly, the effect of a 1 per cent increase in the price of pork is to increase the probability to purchase chicken by 0.25 per cent.

Empirical OLS Estimates

Estimates obtained in the second stage of the Heckman two-step procedure appear in Table 10.5. The measure of statistical significance is the student *t*-statistic. Correction for selectivity bias appears to improve the statistical significance of the variables.

Table 10.5: Estimates of Factors Influencing Household Purchases of Beef, Chicken, Pork and Fish in Cameroon Obtained in the Second Stage of the Probit Model

Variable	Beef	Chicken	Pork	Fish
PB _{zj}	-0.302**	-0.619**	-0.273*	0.198**
PC _{zj}	-0.017*	-0.806**	0.332	0.216*
PP _{zj}	-0.227	-0.563*	-0.607**	0.018
PF _{zj}	0.313**	0.002**	-0.160	-0.401*
IN1 _{zj}	0.048**	-0.032	-0.008	0.220*
IN2 _{zj}	0.076*	-0.089	0.076	0.323*
IN3 _{zj}	0.622**	0.324**	0.656*	-0.544
HS _{zj}	-0.025*	-0.075*	0.229	0.226*
AG1 _{zj}	0.454	0.656	-0.320*	0.134*
AG2 _{zj}	0.234*	-0.652*	0.297	-0.252**
ED1 _{zj}	-0.120**	-0.043	0.005	0.051**
ED2 _{zj}	-0.011	-0.006**	-0.023*	0.033
ED3 _{zj}	0.044	0.121	0.098	-0.143
OC1 _{zj}	0.202**	-0.028**	-0.007	0.085
OC2 _{zj}	0.116	0.037	-0.062**	-0.088**
OC3 _{zj}	0.166*	0.010*	0.023*	0.044*
RE1 _{zj}	0.323	0.067*	-0.357*	0.810**
RE2 _{zj}	0.363**	0.039	n.a.	0.789**
MR1 _{zj}	0.082**	0.047*	-0.166	0.024**
EC _{zj}	0.219**	0.290**	0.902*	0.532**
Intercept	0.945	-0.766	-0.752	1.816
Likelihood	36.088	73.877	78.443	110.323
Ratio Test				
Adj. R ²	0.718	0.698	0.648	0.766

* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

Source: author's calculations.

This time, 51 of the 79 coefficients are statistically significant – 26 at $P < 0.05$ and 25 at $P < 0.10$. The goodness-of-fit, measured by the adjusted R^2 s, are superior to the McFadden R^2 s of the probit model. Together, the independent variables explain over two-thirds of the variation in the probability that households will purchase meat and fish in Cameroon. The error-correction variable (EC_{zt}) is significantly different from zero ($P < 0.05$) for all four products. This suggests that if the analysis was restricted to the use of only positive responses, sample selection bias would have been introduced in the demand for livestock products and fish in Cameroon.

Having corrected for sample selection bias, the results in Table 10.5 indicate that the effect of an increase in the price of chicken is to reduce its purchase by about two times the reduction in the purchase of fish given an increase in the price of fish. Similarly, an increase in the price of pork would reduce its purchase by about two times the reduction in the price of beef when the price of the latter goes up. The cross-price effects indicate that fish is a close substitute to beef and chicken, a result that is in agreement with that of Cheng and Capps (1988). However, the values reported in this study are larger than 0.0382 reported by Cheng and Capps for finfish and poultry, and 0.0184 for finfish and red meat.

The effect of money income on household decisions to purchase meat and fish is mixed for the different income groups in Cameroon. Low- and middle-income households, for example, exhibit a greater likelihood to purchase beef and fish than they would purchase chicken and pork. High-income households exhibit a greater likelihood to purchase beef, chicken and pork, but not fish. While beef and fish are normal goods and chicken and pork inferior goods to low- and middle-income households, only fish is an inferior good to high-income households. Using data from a household consumption survey in Cameroon, Njinkue (1992) reported a similar finding that fish is a normal good to low-income households and an inferior good to high-income households. The implication of these results is that a policy to raise household money incomes would stimulate market demand for beef and fish but not for chicken and pork by low- and middle-income households. Such a policy, however, would reduce market demand for fish only by households within the high-income bracket.

As the size of a household increases, its purchase of beef and chicken diminishes while its purchases of pork and fish increase. An additional household member would increase the purchase of fish by 0.23 per cent but would reduce its purchases of beef and chicken by 0.03 and 0.07 per cent, respectively. Married households appear to increase their purchases of beef, chicken and fish and to reduce their purchases of pork. The negative association between marital status and the decision to purchase pork is in accordance with the findings of Savadogo and Brandt (1988). While middle-aged household heads are associated with a greater likelihood to purchase beef and chicken, the likelihood that they would purchase pork and fish is quite small. For older household heads, the probability to purchase chicken is small compared to the other products.

Except for pork, education does seem to significantly influence demand for beef, chicken and fish. Providing formal education to household heads who have had no formal education appears to increase the likelihood that they would purchase beef and fish but not chicken or pork. An increase in formal education of household heads who have already acquired primary education will enhance their demand for beef by 0.12 per cent. Educating further those with secondary or high school education will boost the likelihood of them purchasing beef by 0.04 per cent and chicken by 0.12 per cent. These findings suggest the need for increasing household awareness on the nutritional qualities of animal and fish products as a basis for increasing consumption of these products.

Except pork, households affiliated with the Christian faith appear to be associated with a greater likelihood of purchasing beef, chicken and fish. However, for Muslim households who do not consume pork, their probability of purchasing fish is quite small.

Farm-employed household heads have a greater likelihood of purchasing beef and fish but not chicken and pork. Household heads employed in the civil service tend to favour the purchase of beef and chicken but not pork and fish, whereas those in business have a greater likelihood of purchasing all four products.

Conclusions and Implications

This study has used probit analysis to evaluate the effects of individual and household characteristics on the purchase of beef, chicken, pork and fish in Cameroon. Application of the Heckman two-step procedure provided estimates that were more accurate than the normal probit estimates, suggesting that a test for selectivity bias is not merely warranted but is a necessary condition if reliable estimates are to be obtained from cross-sectional surveys carried out over a relatively short period of time. The results reveal that personal, socio-economic and demographic variables can be used not only to describe household consumption behaviour, but also to predict their probability of consuming meat and fish. This has important policy implications, particularly for meat and fish producers who may use the characteristics in targeting. Not only can products be produced for a certain class of households with a set of characteristics, but all classes of consumers can be encouraged to consume more meat and fish with the appropriate policy incentives.

The results of this study indicate that fish is a relative necessity in Cameroon and is often substituted for beef and chicken by households whose profiles include being of low income levels, having large household sizes, are of middle age and are less educated. Whereas chicken and pork substitute each other, they are each complementary to beef. The profiles of households likely to purchase beef include being married, of middle age, educated and of the Muslim faith. Profiles for households most likely to increase their purchases of chicken include being of high income levels and are public sector-employed.

A number of implications can be drawn from the preceding profiles. First, the reduction observed in the purchase of chicken and beef owing to an increase in household size implies that the current family planning efforts, which aim at smaller

but healthy families, would encourage greater consumption of chicken and beef in Cameroon. For this to happen, however, market prices must be such that households can afford given their current income levels. Secondly, the fact that household purchases of beef, chicken and pork move in the same direction means that a high cost of production of any one product (e.g. high price of chicken production owing to high feed costs or high import taxes) could impact negatively on household purchases of the other products. However, because fish is a close substitute, the price increase could encourage both the consumption and production of fish. On the other hand, any policy that is aimed at keeping (say) beef prices low would not only benefit beef consumers, but would stimulate the production of chicken and pork, assuming that the existing price levels are such that the production costs of these products are covered. Thirdly, if low-income households whose purchases of beef, chicken and pork are constrained by inadequate income are to benefit from any increase in production of these products, their income levels must be adjusted upwards. Therefore, a policy to increase the monthly minimum wage, which is currently estimated at 35,000 FCFA (\$US 58.0), would assist low-income households to increase their purchases of beef, chicken and pork; in effect this would help to shift their consumption behaviour away from fish.

Note

1. Heteroscedasticity (unequal variance) occurs when the ordinary least squares (OLS) assumption that all disturbance terms have the same variance is violated. When this occurs, OLS generates estimates that are biased, inefficient and may lead to incorrect statistical tests. Alternative approaches for obtaining unbiased estimates in the presence of heteroscedasticity include the generalized least squares (GLS) and maximum likelihood estimation (MLE). For details on these estimation procedures, see Judge et al. (1985) and White et al. (1993).

References

- Anim, F.D. and M.C. Lyne, 1994, 'Econometric Analysis of Private Access to Communal Grazing Lands in South Africa: A Case Study of Ciskei', *Agricultural Systems*, Vol. 46, pp. 461–71.
- Atouga, L., 1992, 'The Impact of Imports Taxation on Local Meat Production and Consumption'. In: M.R. Langham and F. Kamajou, eds, *Agricultural Policy Analysis in Sub-Saharan Africa*, Proceedings of an International Symposium held at the University Centre of Dschang, Cameroon, pp. 257–73.
- Capps, O. Jr, D.S. Moen and R.E. Branson, 1988, 'Consumer Characteristics Associated with the Selection of Lean Meat Products', *Agribusiness*, Vol. 4, pp. 549–57.
- Cheng, Hsiang-tai and O. Capps Jr, 1988, 'Demand Analysis of Fresh and Frozen Finfish and Shellfish in the United States', *American Journal of Agricultural Economics*, Vol. 70, pp. 533–42.
- FAO (Food and Agriculture Organization), 1998 [and previous years], *Production Yearbook, 1998* [and previous years].

- Falusi, B., 1976, 'Application of Multivariate Probit to Fertilizer Use Decisions: Sample Survey of Farmers in Three States in Nigeria', *Journal of Rural Economy and Development*, Vol. 9, pp. 9–66.
- Fletcher, S.M. and J.V. Terza, 1986, 'Analysis of Farmers' Selection of Available Marketing Alternatives using the Multivariate Probit Model', *Canadian Journal of Agricultural Economics*, Vol. 34, pp. 243–52.
- Green, W.H., 1990, *Econometric Analysis*, New York: Macmillan.
- Hahn, W.F., 1988, 'Effects of Income Distribution on Meat Demand', *Journal of Agricultural Economics Research*, Vol. 40, pp. 19–24.
- Heckman, J.J., 1976, 'The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimation for such Models', *Ann. Econ. and Soc. Measure*, Vol. 5, pp. 475–92.
- Holtzman, J.S., 1988, *Price Policy-induced Distortions: Undermining Incentives to Slaughter Stall-fed Cattle in Urban Areas of Northern Cameroon*, ILCA–ALPAN Network Paper No. 17, pp. 1–18.
- Ingco, M.D., 1990, *Changes in Food Consumption Patterns in the Republic of Korea*, World Bank Working Papers 506, Washington, DC: World Bank.
- Jones, E., M.T. Batte and G.D. Schnitkey, 1989, 'The Impact of Economic and Socio-economic Factors on the Demand for Information: A Case Study of Ohio Commercial Farmers', *Agribusiness*, Vol. 5, pp. 557–71.
- Judge, G., R. Hill, W. Griffiths, H. Lutkepohl and T. Lee, 1985, *Introduction to the Theory and Practice of Econometrics*, 2nd edn, New York: Wiley.
- King, R.P. and D. Byerlee, 1977, *Income Distribution, Consumption Patterns and Consumption Linkages in Rural Sierra Leone*, African Rural Development Paper No. 16, Michigan: Department of Agricultural Economics, Michigan State University, East Lansing.
- Kmenta, J., 1971, *Elements of Econometrics*, New York: Macmillan Publishers.
- Maddala, G.S., 1983, *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge: Cambridge University Press.
- MINAGRI (Ministry of Agriculture), 1986, *Agricultural Census*, Yaoundé: Department of Agricultural Statistics.
- MINEPIA (Ministry of Livestock, Fisheries and Animal Industries), 1986, *Annual Report 1986*, Yaoundé.
- MINEPIA (Ministry of Livestock, Fisheries and Animal Industries), 1993, *Analysis of Meat Policy Decisions on Domestic Meat Consumption and Production in Cameroon*, Yaoundé: Department of Studies and Project.
- MINEPIA (Ministry of Livestock, Fisheries and Animal Industries), 1996, *Annual Report 1996*, Yaoundé.
- MINPAT (Ministry of Planning and Territorial Administration), 1987, *National Population Census*, Yaoundé.
- Njinkue, D., 1992, 'Contribution à l'étude de la politique alimentaire du Cameroun: le cas des viandes'. In: M.R. Langham and F. Kamajou, eds, *Agricultural Policy Analysis in Sub-Saharan Africa*, Proceedings of an International Symposium held at the University Centre of Dschang, Cameroon, pp. 371–98.
- Popkin, B.M., D.K. Guilkey and P.S. Haines, 1989, 'Food Consumption Changes of Adult Women between 1977 and 1985', *American Journal of Agricultural Economics*, Vol. 71, No. 4, pp. 949–59.

- Press, S.J. and S. Wilson, 1978, 'Choosing Between Logistic and Discriminant Analysis', *Journal of American Statistical Association*, Vol. 93, pp. 699–705.
- Sasaki, K. and Y. Fukagawa, 1987, 'An Analysis of the Japanese Expenditure Pattern: An Application of a Dynamic Linear Expenditure System to the 1961–1982 Data', *Agribusiness*, Vol. 3, pp. 51–68.
- Savadogo, K. and J.A. Brandt, 1988, 'Household Food Demand in Burkina Faso: Implications for Food Policy', *Agricultural Economics*, Vol. 2, pp. 345–64.
- Strauss, J., 1983, *Socio-economic Determinants of Food Consumption and Production in Rural Sierra Leone: Application of an Agricultural Household Model with Several Commodities*, International Development Paper No. 5, Michigan: Department of Agricultural Economics, Michigan State University, East Lansing.
- Tambi, E.N., 1996, 'The Dynamics of Household Beef Consumption in Cameroon', *Agricultural Economics*, Vol. 14, pp. 11–19.
- Tambi, E.N., 1998, 'Testing for Habit Formation in Food Commodity Consumption Patterns in Cameroon', *Journal of International Food and Agribusiness Marketing*, Vol. 10, No. 1, pp. 15–30.
- Tambi, E.N. and B.M. Vabi, 1991, *Price and Income Elasticities of Demand for Beef, Chicken and Fish in Bamenda, Cameroon: Some Policy Implications for Increasing Consumption*, Bambui (Cameroon): Institute of Animal Research.
- White, K.J., S.D. Wong, D. Whistler and S.A. Haun, 1993, *SHAZAM Econometric Computer Program – User's Reference Manual*, New York: McGraw-Hill.

Economic Analysis of Private Returns to Investment in Education in Cameroon

Aloysius Ajab Amin and Wilfred J. Awung

Introduction

Newly independent African governments in the 1960s and later invested heavily in education with the conviction that this would generate rapid economic growth. In fact, education with investment in human capital was expected to contribute to growth by improving the productivity of the labour force, reduce income inequality and poverty. The human capital model (Becker 1993), the endogenous growth models (Lucas 1988) and the application of augmented Solow model Mankiw, Romer and Weil 1992) have stressed the important role of education with human capital in economic growth. Thus, the budget allocation for education became the largest category of state expenditure. Private returns to investment in education tended to be higher than investments in other sectors of the economy, as the labour force acquired more education and skills (Glewwe 1999). Education, therefore, triggers regional mobility of labour. People with higher education move from lower-paid jobs to higher-paid ones as their productivity increases. According to a recent study, farmers who are educated produce on average eight times more output than their non-educated counterpart (World Bank 1992). But education's contribution to growth can only be significantly important where graduates are gainfully employed. With the decline in most Africa economies and the changing labour market conditions in many African countries, the many graduates left unemployed calls into question the wisdom and nature of such investments in education.

Investment in education is evaluated in terms of returns to investment. The rate of return can be estimated as the discount rate that equates the present value of economic costs and the benefits of an investment. Private rate of return to education is calculated using after-tax earnings differentials and only those educational costs actually borne by the student or their family. Social rates of return are based on before-tax earnings differentials or total earnings and the total resources the society incurred on education. The human capital model of Beaker (1974) and Mincer

(1975) has been the method used for such evaluation. The Mincerian earning functions have been well applied on individual countries' data, with the semi-logarithm specification being very robust in empirical studies. But controversies exist as to the nature of investments in education in developing countries. Earlier studies reveal that returns to investments in education are positive and decrease the higher the level of education, and as such investments in primary education should be emphasized at the expense of higher education (Psacharopoulos 1994). Recent studies have produced results to the contrary. These reveal that returns to investments in education increase the higher the level of education (Manda and Bigsten 1998; Liu 1998). This is important, as it may underscore the role of education at all levels in the development process.

The aim of this chapter is to evaluate private returns to investment in the different levels of education given the changing labour market conditions in Cameroon. According to Psacharopoulos (1994), private returns to investments in education are an important factor in determining educational attainment, participation and ultimately wages/income. Education is critical in income distribution and economic development. This has led many countries including Cameroon to prioritize public spending on education.

The Cameroon Education System

Education in Cameroon is based on the British and French educational systems. As such, there are two educational systems in the country. In the French-speaking regions or areas, the French system of education dominates, while in the English-speaking regions or areas, the English pattern of education prevails. The colonial background and the diversity of Cameroonian society make the Cameroonian educational system unique in Africa. The dual structure of education creates structural constraints that have made the development of education complicated. For instance, primary education is six years in the Francophone system, while in the Anglophone system it is seven years. Secondary education is four years in the Francophone, while it is five years in the Anglophone system. However, at high school, before entry into university, it is three years for the Francophone and two years for the Anglophone student.

In Cameroon, education is provided by both public and private sectors. The private sector includes religious and private lay institutions, which are usually supported by the government through subvention. Currently, the aims of education in Cameroon are to:

- i) rapidly eliminate regional disparities in terms of educational achievement through increase in equipment, teaching material and teaching staff;
- ii) increase the enrolment of primary and secondary schools;
- iii) improve the training programmes for teachers;
- iv) periodically reform the syllabuses;
- v) constantly improve the quality of education.

From independence, the national budget for education ordinarily financed all the operating costs in public schools and 80 per cent of the same costs in non-public schools (Boyle 1996). This shows the high priority accorded to education by the Cameroonian government. Since 1982, investment in nursery, primary, as well as general and technical secondary education has sharply increased. In 1983–84, investment in school infrastructure stood at 15,000 million francs CFA as compared to 9,000 million francs CFA the previous year. It increased every year such that by 1987 it had reached 78,000 million francs CFA as compared to a total investment of 20,000 million for the twenty-five-year period, 1958–82 (Cameroon 1990). See Tables 11.1a, 11.1b and 11.1c, and also Appendix Table 11A.1.

Table 11.1a: Enrolment by Educational Levels

Year	Nursery Education	Primary Education	Secondary General	Secondary Technical	Higher Education	Higher Education
1985	67,316	1,443,728	180,248	59,290	10,231	32,000 (1970)
1986	73,506	1,709,518	256,449	91,983	15,963	
1987	83,963	1,795,254	291,842	99,777	19,558	
1988	88,127	1,875,221	317,766	102,302	20,326	
1989	91,861	1,964,158	345,977	100,139	22,162	
1990	92,966	1,939,908	367,426	89,702	29,990	32,000
1991	93,771	1,963,671	409,729	90,051	36,491	
1992	93,944	1,932,916	441,118	100,768	37,300	50,000
1993	92,683	1,920,985	446,987	102,134	42,921	
1994	73,420	1,871,265	453,323	97,975	38,963	
1995	70,202	1,840,995	450,799	96,397	42,083	
1996	79,400	1,874,873	484,461	108,519	39,956	
1997	85,230	1,931,537	443,651	108,020	39,799	
1998	88,811	1,975,831	477,955	110,144	51,133	
1999	103,161	2,073,266	507,408	118,645	61,344	
2000	90,648	2,237,083	554,830	143,839	60,517	
2001	125,674	2,689,052	684,583	146,469	63,135	
2002						71,000

Source: National Institute of Statistics, *Cameroon in Figures* for various years, *Cameroon Annual Statistical Yearbooks*, 2001, 2002.

Table 11.1b: Enrolment by Nursery, Primary and Secondary Levels and by Gender

Year	Nursery		Primary		General Secondary		Technical Secondary	
	Male	Female	Male	Female	Male	Female	Male	Female
1990	46 869	46 097	1 020 965	918 943				
1991	47 553	46 218	1 034 619	929 052	240 216	169 517	52 689	37 362
1992	47 693	46 251	1 018 580	914 336	261 061	184 977	56 874	41 411
1993	47 126	45 557	1 013 760	907 225	261 365	190 051	58 277	40 851
1994	37 003	36 417	989 078	882 187	249 593	195 073	57 302	38 396
1995	35 453	34 749	972 879	868 116	241 547	200 484	58 935	39 444
1996	39 889	39 511	990 484	884 389	270 568	209 622	64 930	44 131
1997	42 354	42 876	1 039 372	891 757	242 517	201 134	65 246	42 774
1998	44 410	44 401	1 062 817	913 014	265 203	212 792	66 849	43 295
1999	52 327	50 834	1 122 381	950 885	273 279	234 129	70 803	47 842
2000	45 966	44 682	1 213 759	1 023 324	295 941	258 829	88 963	54 876
2001	63 010	62 664	1 447 881	1 241 171	365 763	315 820	90 493	55 976

Source: MINEDUC, NIS 2002. 1987 is given as 1986/87.

Table 11.1c: Gross Nursery and Primary Enrolment Rate (%) in 1997

Province	Nursery School			Primary School		
	Boys	Girls	Total	Boys	Girls	Total
Adamoua	2.58	2.9	2.74	61.16	44.61	53.27
Centre	20.28	20.16	20.23	116.14	113.52	114.24
East	8.79	9.35	9.06	92.83	80.10	86.78
Far North	1.84	1.20	1.52	104.12	48.91	76.78
Littoral	20.24	22.52	21.36	111.52	111.12	111.32
North	2.46	3.19	2.82	73.08	41.85	58.30
North West	2.63	2.88	2.75	73.08	72.94	73.00
West	7.95	8.10	8.00	105.21	105.29	105.25
South	13.69	16.00	14.83	130.71	129.86	130.30
South West	5.93	6.76	6.33	79.19	81.06	80.10
Cameroon	11.28	11.75	11.51	86.85	79.73	83.41

Source: MINEDUC (1998) *Tableau de Bord Statistiques année scolaire 1996/97*, Yaoundé.

Until recently (1992), Cameroon had one national university, the University of Yaoundé; This University had a campus in Yaoundé and four specialized centres in Douala, Buea, Ngoundere, and Dschang. While the facilities in the University centres were under-utilized, those at the University of Yaoundé were overstretched. This

led to overcrowding in the lecture halls and a decline in the quality of teaching. The 1993 university reforms created five new state universities, bringing the number of state-owned universities to six. Admission into these universities depends on performance at the Baccalaureate for the Francophone system and the General Certificate of Education advanced level for the Anglophone system. Currently, there are more than 40,000 students registered in the country's six state-owned universities.

Education is free (no fees) at the primary level. Despite this, the illiteracy level is still high in some regions of the country. UNESCO estimated the literacy rate at 45 per cent in 1990; this rate is below the national average. In 1990, two-thirds of the male population aged 15 and more had some knowledge of reading and writing, while this figure was only two-fifths for the female population.

According to government policy, secondary schools are to be created in all administrative units of the country, the district, the sub-division and the division. Every district and sub-division has a secondary school, while at the divisional level there are high schools, bilingual high school, government technical high school and a teachers training college. In the 1980s, the number of primary schools increased from 4,971 to 6,328 or 27.3 per cent for the period 1980/81–1987/88. Also, higher education establishment numbers rose from 326 to 425 or 30.4 per cent and vocational schools rose from 161 to 321 during the same time period. Student population also grew significantly. In primary schools, the population increased from 1,379 million to 2,107 million or 32.8 per cent in secondary schools, it increased from 169,300 to 379,000 or 13.5 per cent (Cameroon 1992). Despite the impressive growth in school enrolment rate, a significant number of children of schoolgoing age are not enrolled in an educational establishment. This is partly because educational expansion has not kept pace with population growth. But the national net primary school enrolment rate rose from 67 per cent in 1979 to an impressive 84 per cent in 1990, although the upturn has resulted in sharply increased costs owing to high dropout and repetition rates (Boyle 1996).

The content of the educational curriculum does not seem to be very relevant to the needs of the economy or society. Before the 1990s little amounts were incurred in registration, school uniforms and books in public schools, while in the private and denominational schools students paid for tuition, registration, books, uniform and boarding fees. With the economic crisis, it became difficult for the government to continue providing subvention to non-public schools. In 1989, subsidies to private schools were reduced, at the national level, from CFAFs 8,000 million to 6,000 million (Boyle 1996). But this situation was worsened by delays in payments. As such, parents were called upon to continue making sacrifices for the education of their children in the form of increases in school fees. Parents/teacher associations (PTA) started taking part in the financing and management of schools. This included building more classrooms and recruiting staff. In spite of these financial difficulties, the government has continued to open more schools in the country. The schools are regrettably poorly equipped and staffed.

Statement of the Problem

Initially, expansion of educational institutions led to an increase in the supply of an educated and skilled labour force that was readily absorbed into the private and public sectors. This is because until recently the Cameroonian economy was expanding. With the production of oil, starting in 1979, GDP grew at a high rate of 8 per cent per annum and the per capita income was about \$800. There was sharply increased employment in the public service even without specific job descriptions. As such, the public service expanded greatly. In 1986, Cameroon had about 180,000 civil servants, the third largest in Africa. Civil servants, apart from being paid high wages, were given generous benefits as incentives to improve their performance.

Besides the public sector, Cameroon had an underdeveloped private sector that also employed many educated and skilled workers. There was a minimum wage legislation and despite the fact that trade unions activity was controlled, salary increases were announced yearly for the public sector. It was more profitable to attain public sector employment.

By 1988, the Cameroonian economy was in crisis owing to changes in the international economic environment and poor economic management domestically. This led to the implementation of a structural adjustment programme (SAP) to restore the economy on a growth path as recommended by the Bretton Woods Institutions. Part of this programme involved a freeze in employment in the civil service and a more than 60 per cent reduction in the salaries of civil servants in 1993. The reduction in nominal income and freeze in employment led to an increase in the rate of unemployment. In 1992, there were over 76,500 job seekers in Cameroon (Derrick 1992). Most school leavers are now seeking employment in the private sector or becoming self-employed. Thus, the informal sector is becoming a major source of employment and many parents are now questioning the wisdom of acquiring further education that may not be relevant in many self-employed activities. In such a case it is the poorly educated that are getting employment at the expense of the more educated. It has become a serious problem for Cameroon as the economy cannot absorb the highly educated.

Civil servant salaries have been slashed, while private sector wages and salaries are freely negotiated between employers and employees. If education or human capital is not adequately rewarded by the current employment system, the economy will be failing to utilize fully its human capital, and more importantly long-run economic growth will be adversely affected in the face of a lack of relevant human capital accumulation. Thus, an analysis of the return to education under the current employment environment is of great importance to the development of appropriate policies for growth and development. That is, it is important to estimate the rate of return to the different educational levels, and find out the benefits relative to the main economic sector and gender. Hence, the main objective of this study is to analyse the returns to private investment in Cameroon's education system, showing the relationship between years with levels of education and earnings.

Literature Review

In recent years, there has been an increase in the number of studies that have sought to analyse private returns to investment in education. Most of these studies have analysed the impact of length of schooling, labour market experience, innate ability, family background, and school quality on earnings. Psacharopoulos (1994) made an extensive survey of published studies on private returns to investment in education around the world, using the elaborate and the earnings function method. He found that private returns to education are generally higher than corresponding social returns. There is an observed declining pattern of the returns to education over time, while all social returns decline at between two and eight percentage points over a 15-year period. Within a country, the rates of return generally decline the higher the level to which they refer. Most of these rates are substantially higher than conventional returns on alternative opportunities. Finally, the less developed the country, the higher the returns to investment in education. However, these results have been criticized as being irrelevant given the fact that they employed outdated cross-sectional data and that the educational expansion over the decade since then must have decreased the returns to investment in education.

In the same direction, Tafah-Edokat (1998), studying private returns to investments in education in Cameroon, reached the same conclusion as Psacharopoulos. He found that returns to education are positive and in some cases higher than returns to investment in other sectors of the economy. Primary education gives the highest returns followed by secondary and tertiary education. Thus, Tafah-Edokat concludes, like Psacharopoulos, that investment in primary education should be prioritized and that individuals willing to pursue further education should be made to bear a higher proportion of the cost of such education. This study was carried out when the Cameroon economy was buoyant and the respondents were mostly limited to civil servants. However, since 1986, the Cameroonian economy has experienced a crisis and civil servants have suffered a more than 60 per cent salary reduction, while the numbers of unemployed people have increased. The study is restricted to the primary level in one region of the country, in total neglect of the social benefits of higher education. In fact, the change in the supply of unemployed graduates calls into question the relevance of Tafah-Edokat's study. Furthermore, stress should not be only on the primary level, given the critical role of higher education in today's world.

In Kenya, there have been many studies on returns to education. Some of these studies have sought to analyse factors that have affected private returns to investment in education over time. In this light, Manda and Bigsten (1998) analysed the impact of educational expansion and returns to schooling in Kenya. They found that the private return to secondary and tertiary education is high, while it is close to zero for primary education. This result is different from the previous studies and may be related to the filtering process. At the primary level, substantial filtering down takes place and there are large differences in pay by occupation, whereas for the uneducated

there is less scope for filtering down and wage differences by occupation are small. Returns to primary education for the recent cohorts of primary school graduates fall substantially because they perform tasks for which their education is less valuable (Knight et al. 1992). This might have become more important as the level of unemployment was quite high.

The study of Appleton, Bigsten and Manda (1999) with a large data set is interesting as it shows the impact of declining economic performance on educational expansion. The returns to primary education remained unchanged and also the returns to tertiary education did not fall. Yet returns to secondary education declined. To some extent, the results confirmed the previous one.

Human capital theory has also been applied to former socialist countries to establish the impact of labour market liberalization on earnings. In the case of Slovenia, Orazem and Vidopivec (1995) analysed the winners and losers of the transition process by tracing out changes in returns to education, experience and gender, and changes in wage inequality from 1987 to 1991. Their main finding is that returns to human capital increased dramatically during the transition. Rising returns to education and experience contributed to rising wage inequality, but variance for wages increased for individuals with identical skills as well. Women gained over men, primarily because women occupied sectors less adversely affected by the transition. Efforts to use pension policies to encourage early retirements have drastically reduced the labour supply of workers of pension age and work experience.

In the case of China, Liu (1998) found private returns to education to be between 3 and 6 per cent. Earnings are higher in the pure public sector than in the collective sector, while the estimated rates of return to education are similar in these two sectors. An analysis of the direct effect of earnings and the rate of returns to education during the labour market contract system and the floating wage scheme reveals positive and significant association between earnings and these two reform measures. Moreover, wage reform (floating wage scheme) is found to have raised the rate of return to education significantly.

The number of school leavers finding employment in the formal sector has been declining in relation to the number of uneducated people so employed. It has, therefore, become necessary to study the rates of returns for the self-employed. However, some critics maintain that it is ability, school quality and socio-economic background that determine earnings. John Carlyle Raven's progressive matrices have usually been used to test ability in forming perceptual relations and reasoning by analogy even independent of formal schooling and language. Applying Raven's test to Thailand's agricultural production function, Lau and Chou (1987) found the positive effect of education on farm productivity to be highly significant.

Glewwe (1996) used data on cognitive skills and a measure of innate ability to assess the impact of education on ranges. He found that it was cognitive skill acquired rather than accumulation of schooling credentials or innate ability that determined wages in the private sector in Ghana. Apart from ability, the quality of school is also said to determine earnings and returns to education in the case of Kenya. Armitage

and Sobot (1989) measure quality in terms of student/teacher ratio. They found that private returns to investment in secondary education are markedly higher for children who attend government secondary schools than those of Harambe schools, which are self-help schools. Government schools are of higher quality and thus their pupils have higher levels of cognitive skills. This may not be true in some cases where public schools are overcrowded with student/teacher ratios very high.

In the case of Ghana, Glewwe (1996) determined school quality by using dummy variables for three of four geographic regions in Ghana to control for regional variation in school quality and by introducing an interaction term between age and years of schooling to capture variation in school quality over time. He found that regional dummy variables showed strong variation in attainment of reading and mathematical skills across geographical regions in Ghana. On the average, one could probably state that the schools in the coastal areas were better than those in the east. Behrman et al. (2002) examined the impact of school quality on earnings in Pakistan. They found that rural Pakistan has higher rates of returns in investing in primary school quality and quantity than in investing in middle schools. Expanding low-quality schools for girls increased earnings more than increasing the quality of existing schools. It may be the case since the girls might have been more deprived of schooling than the boys who are already in schools. So, initially, earning for girls would tend to increase sharply.

Methodology

Sources of Data

This study utilizes labour market survey data collected in the urban and rural areas of the Mfoundi, Mounjo, Mezam, Benoue, Nyong and Soo Divisions of Cameroon in 1994 by the Department of Economics, University of Laval and the central statistics office, Yaoundé. Information was solicited from 5.5 respondents from five out of ten Cameroonian provinces. Of these respondents only 1.784 respondents were analysed. Information was solicited on the following variables: daily wage measure in CFA francs, age measured in years, level of education measured in years, experience measured as age minus schooling. Also, additional information was solicited on the nature of the respondents' economic activity whether agricultural or non-agricultural, marital status and nationality.

Theoretical Model

We use descriptive statistics and earnings functions. There are several analytical techniques used to estimate private returns to investments in education. Psacharopoulos (1994) identifies three such techniques: the elaborate method, the shortcut method, and the earnings equations method. According to Psacharopoulos, the elaborate method follows an algebraic definition of the rate of return, which is the rate that equates a stream of benefit to a stream of costs for a given period. In this method of private rate of return calculation, the only cost of the education

project under evaluation is the opportunity cost of staying on at school beyond the age of 18 instead of entering the labour market. The data requirement of this method is quite demanding and is usually not available for most developing countries.

The shortcut method estimates in an explicit way what the earnings method estimates implicitly. In this method one can use tabulated earnings of workers to estimate private returns to education. Also, it is easy to add the resource cost of schooling to arrive at the social returns. Hence, it is of great advantage where earnings of individuals are not available. The basic earnings function is based on Mincer (1974) and involves the fitting of a semi-log ordinary square regression using the natural logarithm of earnings as the dependent variables, and then the years of schooling, potential years of labour market experience and its square as independent variables. In this semi-log earnings functions specification, also used by Appleton et al. (1999), the coefficient on years of schooling can be interpreted as the average private rate of return to one additional year of education regardless of the education level to which this year of schooling refers.

We can break down the standard earning functions into components relating to schooling, post-school or labour market experience (work), before schooling endowments. It can be assumed that the log earnings Y_{ij} for the i th family member j is related to schooling S_{ij} , work experience ex_{ij} , heritable earnings H_{ij} , and orthogonal earnings u_{ij} . From this we have the following function:

$$Y_{ij} = aS_{ij} + bex_{ij} + cH_{ij} + u_{ij}$$

where: S , ex , H are vectors the relevant variables and a , b , c are the respective parameters. In the Mincerian model the key determinant is the earnings, making it easier to fit data on years of schooling to estimate returns on education.

Empirical Model

Hence the earnings function can be specified as:

$$\ln y = a + b.s + c.ex + d.ex^2 \quad (1)$$

where:

- $\ln y$ = is the natural logarithm of earnings
- a = constant
- s = individual's years of schooling or different levels of schooling
- ex = work experience
- ex^2 = work experience squared
- a, b, c, d = parameters to be estimated

The above function can be modified to include regional dummies, sex or different levels of educational attainment. For the purpose of this study, different levels of educational attainment are used. Since we intend to calculate the private rate of returns for different levels of education, the basic earnings equation becomes:

$$\ln y = a + b \text{ prim} + c \text{ sec} + d \text{ univ.} + f \text{ ex} + g \text{ ex}^2 \quad (2)$$

where prim, sec, univ stand for primary, secondary and university levels of education respectively and ex is work experience.

From the above earnings function, one can calculate the rate of return of investment in education after acquiring an additional year of schooling. This is given as:

$$\ln dy/ds \tag{3}$$

which is additional earnings resulting from an extra year of schooling. The way to compute the returns to an extra level of education is taking the antilog and using the formula:

$$\text{Returns} = \{ \exp (\ln y_j - \ln y) - 1 \} \tag{4}$$

This rate can be divided by the numbers of years at each level to get annual returns.

The estimates from equation (2) provide consistent estimates; but there may be correlations between education and unobservable variables such as family characteristics or background. This is taken care of by adjusting the model to account for the observables or that may not necessarily have a significant effect.

Empirical Results

Table 11.2 presents the mean and standard deviation of the main variables. The mean age of males is higher than that of females. The mean age of the sample is 39.46, for males 40.59, for females 38.03, for agricultural 41.38 and non-agricultural 37.95 for those working in these sectors. The mean of experience is 23.01 overall, 24.78 for males, 22.14 for females, 25.20 for the agricultural sector and 22.53 for the non-agricultural sector. The mean years of schooling are 9.84 for overall sample, 9.8 for males, 9.89 for females, 10.17 for agricultural and 9.42 for non-agricultural sectors. Therefore, females have spent slightly longer at school than men. Females have a higher income than men, while agricultural earnings are higher than those of non-agricultural. The mean income for the overall sample is 208.71 and 196.06 for males, with 224.59 for females, 203.78 for agricultural and 189.58 for non-agricultural. Note that the disparities in the different categories are significant.

Table 11.2: Mean and Standard Deviation of Key Variables

Variables	Overall		Male		Female		Agricultural		Non-Agricultural	
	Mean	St. D.	Mean	St. D.	Mean	St. D.	Mean	St. D.	Mean	St. D.
Age	39.46	13.2	40.59	13.02	38.03	13.13	41.38	13.99	37.95	12.12
Experience	23.61	14.69	24.78	14.16	22.14	15.21	25.20	15.84	22.53	13.49
Years of School	9.84	5.16	9.80	5.05	9.89	5.29	10.17	5.15	9.42	5.06
Earnings	208.71	490.23	196.06	475.20	224.59	508.34	203.78	516.48	189.58	435.43
Number of Observations	1784		993		791		786		979	

Source: survey data on the labour market, 1994.

Table 11.3 shows the percentages: about 4.4 per cent of the people in sample have no education, 51.1 per cent have primary education, and 26.9 per cent have secondary education, while 17.5 per cent have university education. About 4.2 per cent of males have no education, 50.7 per cent have primary education, 29.1 per cent have secondary education and 19.3 per cent have university education; 4.6 per cent of females have no education, 52 per cent have primary education, 24.2 per cent have secondary education, and 19.4 per cent have university education. In sectoral terms, 7.7 per cent of respondents in the agricultural sector have no education, 41.5 per cent have primary education, 36.5 per cent have secondary education, 14.2 per cent have university education; in the non-agricultural sector, 3.6 per cent have no education, 58.3 per cent have primary education, and 19.7 per cent have secondary education, while 18.4 per cent have university education. This means that more than half of the sample have only primary education, followed by secondary education, and then university education.

Table 11.3: Frequency of Schooling of Various Categories in the Sample

Variables	Overall (%)	Male (%)	Female (%)	Agricultural (%)	Non-agricultural(%)
Schooling					
No education	4.4	4.2	4.6	7.7	3.6
Primary	51.3	50.7	54.0	41.5	58.3
Secondary	26.9	29.1	24.2	36.5	19.7
University	17.5	16.0	19.3	14.2	18.4
Number of Observations	1784	993	791	786	979

Source: survey data on the labour market, 1994/95.

Table 11.4 gives the results of the specification of earnings equation taking into consideration the various levels of education (primary, secondary, university), the gender (males and females), as well as two sectors of the economy (agricultural and non-agricultural). The results show that the independent variables adequately explain the dependent variable. This is also reflected by a high R^2 throughout: 83 per cent for overall, 82 per cent for males, 73 per cent for females, 80 per cent for the agricultural sector and 81 per cent for the non-agricultural sector. The difference between two successive levels of education gives the rate of returns to the higher level of the education category (Liu 1998). According to this specification, rates of return are: 1 per cent for university, 36.7 per cent for secondary and 11.3 per cent for the entire sample. For males, the rate of return is 2 per cent for university, 36.8 per cent for secondary and 11.1 per cent for primary school. For females, it is 12 per cent for university, 35.8 per cent for secondary and 11.7 per cent for primary schools.

Table 11.4: Earnings Equation

Independent Variables	Dependent Variable (y)				
	Overall	Male	Female	Agricultural	Non-agricultural
Constant	1.215 (11.177)	1.276 (8.580)	1.108 (6.837)	1.619 (5.987)	.853 (9.979)
Primary	.113 (10.109)	.111 (7.274)	.117 (7.111)	.165 (10.011)	.069 (4.432)
Secondary	.480 (35.792)	.479 (7.271)	.475 (26.204)	.482 (27.571)	.461 (22.156)
University	.481 (38.936)	.481 (28.637)	.487 (26.204)	.516 (30.275)	.465 (23.244)
Experience	.026 (.850)	.014 (.325)	.040 (.885)	.122 (2.609)	-.032 (-.771)
Experience ²	-.039 (-1.230)	-.039 (-.894)	-.034 (-.720)	-.090 (1.892)	-.020 (-.456)
R ²	.827	.817	.73	.80	.810
Sample Size	1784	993	791	786	979

Note: numbers in parentheses are t-statistics.

Source: survey data, 1994; authors' estimates from survey data on the labour market, 1994/95.

For the agricultural categories, the rates are respectively 3.4 per cent for university, 31.7 per cent for secondary education and 16.5 per cent for primary education. For the non-agricultural sector, the rate of return on education is 4 per cent for university, 39.2 per cent for secondary education, 6.9 per cent for primary education. In all the secondary education categories show greater earnings than the others. Our findings tend to confirm those of Teal (2001). His study brings out three main findings: first, the returns to education are less for the non-agricultural self-employed than for wage earners; second, the differences are due to their educational level; and third, the returns to education are non-linear. The returns increase with the level of education except with those of farmers.

Table 11.5 presents the results of changes in earnings accruing after acquiring one extra year of schooling.

Table 11.5: Percentage Increment in Earnings Associated with One Extra Year of Schooling $d\ln/ds$

	Primary	Secondary	University
Overall	.142	.255	.552
Males	.154	.242	.560
Females	.127	.275	.532
Agricultural	.148	.232	.645
Non-agricultural	.130	.271	.488

Source: calculation from survey data on the labour market, 1994.

The results show that for all groups, earnings increase as a result of an extra year of schooling. Female earnings increase more than male from primary to secondary education, while from secondary education to university, males' earnings are more than females'. The non-agricultural sector has a higher increase associated with an extra year of schooling than the agricultural sector.

Table 11.6 presents the private rate of returns to investment according to various levels of education, gender and sectors of the economy. For the whole sample, the return increases the higher level of education in contrast to what is commonly stated, that primary educational returns are usually the highest. In the case of Cameroon the return to university is 27.2 per cent, which is higher than 26.3 per cent for secondary education and only 5.2 per cent for primary education. For males, return from university is 29.3 per cent, which is higher than 28.3 per cent for secondary education. For females, the picture is the same, with returns to education increasing the higher the level of education. The same is true for the agricultural sector and the return to university education. But the results for non-agricultural sector tend to be slightly different. These results also confirm those of Schultz (2004). The overall results underscore the importance of higher education.

Table 11.6: Private Rates of Returns to Education (%)

Rates of Returns	Primary – Illiterates	Secondary – Primary	University – Secondary
Overall	05.2	26.3	27.2
Males	11.8	28.3	29.3
Females	01.9	01.9	21.8
Agricultural	07.3	21.2	33.4
Non-agricultural	06.3	28.0	20.5

Source: calculation from Labour Market Survey Data, 1993/94.

Conclusion

Based on the survey data collected from five provinces of Cameroon, we estimate the percentage change of earnings associated with change in educational level as well as estimates of the rates of return to education on the three main educational levels, two main economic sectors and gender differences. Our focus was on the private rates of returns and marginal changes. It is interesting to note that different educational levels show increasing rates of return from lower to higher levels. Also there are increases in earnings with an extra year of schooling. In the lower levels of schooling female earnings are higher, but the situation is reversed at higher educational levels. The main point drawn from this study is the importance of investment in education particularly at the tertiary level. Hence private investment in higher education is a worthwhile investment. The issue becomes that of financing education by individuals, since more of the benefits seem to accrue to individuals. Given the level of Cameroon's development equity concerns become of great importance. We can talk of cost recovery from tertiary education but in a very limited way. The state or society must still bear much of the cost because of the crucial importance of higher

education and the externalities that it also generates. Initially, the World Bank tended to emphasize the primary level of education almost to the neglect of the tertiary level. Recently, the importance of the tertiary level of education has been recognized. Thus policies designed to favour the primary level must also take into consideration the greater spillover effects of the different educational levels and more so with the fact that the three educational levels form an organic system. The lower levels are inputs into the higher levels, and equally the outputs of the higher educational levels are valuable inputs into the lower educational levels.

There is much evidence on the positive impact of education on productivity and development. Tertiary education should, therefore, be stressed particularly in the present world of information technology and globalization. This is critical, with productivity growth being a key requirement to socio-economic development. There is a caveat on deriving strong policy implications from these results mainly because many non-observables are not fully controlled, and therefore could greatly affect the results. Nevertheless, there is a clear indication on the expansion of education at all educational levels. This must also take into consideration the quality and relevance of such educational expansion to the economy and society.

References

- Amin, Aloysius Ajab, 1994, *Distribution of Income in Cameroon through Education: A Simple Theoretical Model*, RDG Working Paper 3.
- Ashenfelter, O. and A. Krueger, 1994, 'Estimates of Economic Returns to Schooling from a New Sample of Twins', *American Economic Review*, Vol. 84. No. 5, pp. 1157–73.
- Appleton, Simon, Anne Brigsten and Damiano Kulundu Manda, 1998, *Have Returns to Education Changed over Time? Evidence from Kenya, 1978–1995*. mimeo, Oxford: Centre for the Study of African Economics.
- Armitage, Jane and Richard Sabot, 1998, 'Efficiency and Equity Implications of Subsidies to Secondary Education in Kenya'. In: David Newbery and Nicholas Stem, eds., *Taxation and the Developing World*, Washington, DC: World Bank.
- Becker, Gary, 1993, *Human Capital: A Theoretical and Empirical Analysis with special reference to Education*, 3rd edn, Chicago: University of Chicago Press.
- Bennell, Paul, 1996, 'Rates of Return to Education: Does the Conventional Pattern Prevail in Sub-Saharan Africa?', *World Development*, Vol. 24, No. 1, pp. 183–99.
- Behrman, Jere R., David Ross and Richard Sabot, 2002, *Improving the Quality versus Increasing the Quantity of Schooling: Evidence for Rural Pakistan*, PIER Working Paper 02-022, Penn Institute for Economic Research, University of Pennsylvania.
- Boyle, Patrick, 1996, 'Parents, Private Schools and the Politics of an Emerging Civil Society in Cameroon', *Journal of Modern African Studies*, Vol. 34, No. 4, pp. 27–48.
- Cohn, Elchanan, 1972, 'Investment Criteria and the Ranking of Educational Investment', *Quarterly Journal of Economics*, Vol. 86, pp. 355–60.
- Edokat-Tafah, E.O., 1998, 'Rates of Return to Education: A Case of Cameroon', unpublished paper, Department of Economics, University of Yaoundé II, Soa.

- Funkhouser, Edward, 1994, *Changes to Returns to Education in Costa Rica*, University of California, Santa Barbara Working Paper in Economics.
- Glewwe, Paul, 1999, *The Economics of School Quality Investment in Developing Countries: An Empirical Study of Ghana*, London: Macmillan Press.
- Lau, Lawrence J. and C.C. Chou, 1987, *Farm Ability and Farm Productivity: A Study of Farm Households in the Chiang Mai Valley, Thailand, 1972–1978*, Report No. RDT 62, Education and Training Department, Operations Policy Staff, World Bank, Washington, DC: World Bank.
- Lucas, Robert E., 1988, 'On the Mechanics of Economic Development', *Journal of Monetary Economics*, Vol. 22, No. 1, pp. 3–42.
- Manda Damono and Arne Bigsten, 1998, *Changes to Returns to Education Over Time in Kenya*, Mimeo, Oxford: Centre for the Study of African Economics.
- Mankiw, Gregory, David Romer and David Weil, 1992, 'A Contribution to the Empirics of Economic Growth', *Quarterly Journal of Economics*, Vol. 107, pp. 225–51.
- Psacharopoulos, George, 1994, 'Returns to Investment in Education: A Global Update', *World Development*, Vol. 22, No. 9, pp. 1325–43.
- Schultz, Paul T., 2004, 'Evidence of Returns to Schooling in Africa from Household Surveys: Monitoring and Restructuring the Market for Education', *Journal of African Economics*, Vol. 13, Supplement 2, pp. 95–148.
- Teal, Francis, 2001, *Education, Income, Poverty and Inequality in Ghana in the 1990s*, CSAE WPS/2001-21, Oxford: Centre for the Study of African Economics.
- World Bank, 1998, *World Bank Indicators 1998*, CD-Rom, Washington, DC: World Bank.

Appendix

Table A11.1: Change in Student Enrolment in Cameroon: Primary, Secondary and University, 1989/90–1996/97

School	Sex	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Primary	M	1020965	1034619	1034619	1013760	989078	972879	990484	1039372
	F	918943	929052	929052	907225	882187	868116	884389	891757
	T	1939908	1963671	1932916	1920985	1871265	1840995	1874873	1931129
Secondary	M	53503	52689	58003	58618	58298	57876	64317	65246
	F	36199	37362	42765	43516	39677	38521	44202	42774
	T	89702	90051	100768	102134	97975	96397	108519	108020
University	T	29457	34180	38342	44551	42320	42211	42199	

Source: Annuaire statistique du Cameroun, various years, 1990–98.

Internal Efficiency of Secondary School in Cameroon: Institutional Concerns

Isidor Nounba

Introduction

Investing in human capital constitutes a key factor in economic growth and economic development (e.g. Ermisch and Francesconi 2001; Jimenez et al. 1997; United Nations 1997; World Bank 1995; Lucas 1988; Boissière et al. 1985). This wave of thought rests on the human capital theory developed by Becker (1975), Mincer (1989), and Schultz (1988). The Government of Cameroon has always devoted significant financial resources to the development of education since the country gained independence (Cameroon 1986; UNESCO 1985). For example, the share of education in total spending net of interest payments, subsidies and other current transfers increased from 13.7 per cent in 1980/81 to 22.1 per cent in 1984/85. In spite of the economic recession, which had a negative impact on public finance, the share of education increased from 21 per cent in 1995/96 to 23.4 per cent in 1999/2000 (Ministère de l'Économie et des Finances (MINEFI), 2000:46).

The 1990s coincided with the implementation of institutional reforms aimed at liberalizing social, political and economic life in Cameroon. Indeed, to combat the economic crisis that hit the country in the mid-1980s, structural adjustment programmes were adopted and implemented. Political changes were made in 1996 with the adoption of a new constitution, which laid down the principle of decentralization and created new institutions. The major objectives of these institutional and political reforms were to liberalize socio-economic life and to promote individual freedom and a free market system. In this context of social, political and economic liberalization, several primary, secondary and higher education establishments were set up. For instance, within this period, the state created five additional universities. The Government of Cameroon has since recognized that good governance constitutes a key step toward sound economic policy and management. Hence, an office was created in the Ministry of National Education (MINEDUC) to eliminate malpractices in the education sector.

The human capital theory advocates investment in human resources as a means of contributing to increased individual productivity and earnings and to reduced inequalities in wealth distribution (e.g. Shultz 1988; Psacharopoulos 1994). But the way educational expenditure is executed can constitute a source of waste and inefficiency, and then become an impediment to economic growth and development because the resources earmarked for education are poorly managed. The problem at stake in this chapter is that in spite of sustained effort of the Cameroon government and private operators toward the education sector, this sector is confronted by numerous problems that undermine its internal efficiency, a situation also faced by other developing countries (Glewwe 2000; Hanushek 1995; Lockheed and Verspoor 1991). Further, the proliferation of private school establishments may become a threat to the internal performance of the educational system in the absence of a clear, simple and consistent legal and institutional framework.

The remainder of the chapter is organized as follows. The next section shows how educational resources are poorly managed, using data collected on some secondary schools in the Centre Province of Cameroon. The following section determines to what extent institutional inconsistencies governing the educational system are a major source of poor internal school performance. The final section presents conclusion and recommendations.

The Cameroon Educational System: Management of Educational Resources

In general, the internal efficiency of an educational system is highly important in determining the impact of education on the socio-economic development of a country. When the repeating rates are particularly high, when the number of students who do not complete a particular cycle or level is high, when the dropout rates are also high, the cost of education per student becomes exorbitant both for citizens and society. Moreover, empirical studies have underscored a negative and significant link between individual earnings and education indicators in African countries (Easterly and Levine 1999; Collier and Cunning 1999; Gupta et al. 1997). The inefficiency resulting from the poor match between training and employment may add to internal inefficiency. Furthermore, poor allocation of existing resources creates problems that hinder both the internal and external efficiency of the educational system.

Cameroon's educational system faces many problems that have been repeatedly acknowledged by educational authorities but remain unresolved. Ntangi (1995) has recorded some of these difficulties, which, according to him, reduce the internal efficiency of the education system. There has been very little improvement in the management of educational resources despite the recommendation of the Forum on Education in 1995.

Rationalization of the management of teaching staff remains to be achieved: a large number of ministerial departments at different levels deal with the teachers' career (Ministry of National Education, Ministry of Economy and Finance, Ministry of Public Service, Ministry of Youth and Sports, Ministry of Higher Education). This situation causes considerable delays and conflicts, which are detrimental to

teachers' morale and commitment to work. This multi-ministerial management of teachers does not help in controlling personnel (Moreaux and Lhermet 2000). For instance, during the general census and reorganization of government employees known as REGAINS, 500 civil servants of the Ministry of National Education alone were identified as being unemployed, yet being regularly paid from the State Budget (MINEDUC 2000).

The multi-polar management of teachers is also a well-known practice within the headquarters of the Ministry of National Education (MINEDUC). Here again following up the career of teaching staff is assigned to four different services and three inspectorates (see Decree No. 95/041 of 7 May 1995). The poor coordination of these different offices (within MINEDUC and between MINEDUC and other ministries), the overlapping of responsibilities and conflicts of competence significantly hinder teaching staff in the proper performance of their duties and also impact negatively on their morale and their ability to work. The possibility of conflicts occurring is reinforced by the fact that all decisions regarding teaching staff (recruitment, transfer, promotion, discipline etc.) are centralized at MINEDUC. The 2001 reform shifted all aspects of staff management to the MINEDUC headquarters in Yaoundé, and excluded other ministries from the process. This was a step towards decentralization that can contribute to reducing sluggishness and delays in the management of teachers provided the reform measures are effectively implemented.

The way trained teachers are utilized is also a cause of concern. One would have expected that in an environment characterized by chronic shortages existing teachers would be assigned to effective teaching in school as a matter of priority. However, a significant proportion of trained teachers are posted to administrative tasks at the headquarters of MINEDUC. Table 12.1 indicates the staff structure at MINEDUC headquarters in Yaoundé as at January 2002,

As observed in the table, as at January 2002, 455 trained teachers were assigned to administrative tasks at MINEDUC headquarters. If we take into account qualified teachers utilized for the same purpose in the external services of MINEDUC (provincial and divisional), this number would be higher. However, at the same time many public schools, both in rural and urban areas, lack this important category of staff. It is worth noting that these teachers, in many cases, have no training in the management of financial and human resources. Hence it should not be a surprise to see that their administrative performance is relatively poor.

Moreover, there is a significant proportion of teachers who have not been properly trained. This proportion was up to 17.6 per cent in public schools in 1999/2000. During the same year, for instance, the number of short-term replacement or stand-in teachers and those on contract who graduated from teachers training colleges and universities represented 60.5 per cent of the teaching staff of the private institutions. Contract and permanent teachers working together in teaching establishments constitutes an offence according to Decree No, 2000/359 of December 2000, which instituted a particular status for MINEDUC civil servants. This decree deals only with one category of teachers, those with permanent status.

**Table 12.1: Distribution of Staff in MINEDUC Headquarters,
January 2002**

Services	Teachers Number	Observations	Others	Total
Committee of Advisors	11	Of which 6 top management, 2 secretaries	8	19
General Secretariat	55	Of which 14 top management, 1 financial agent, 1 driver	27	82
General Inspection	9	Of which 4 top management, 1 liaison agent, 1 secretary	6	15
General Inspectorates of Pedagogy (general secondary education)	75	Of which 52 national inspectors, 18 top management, 1 secretary, 1 liaison agent	7	82
General Inspectorates of Pedagogy (vocational secondary and primary education)	73	All are National Inspectors	0	73
Service of Organization, Diffusion and Coordination	19	Of which 13 top management, 1 financial agent, 2 office employees, 1 liaison agent, 1 secretary	7	26
Directorate of Secondary Education	24	Of which 18 top management, 1 agent, 1 secretary	4	28
Directorate of Secondary, Technical and Professional Education	18	Of which 13 top management, 2 secretaries	4	22
Directorate of Primary, Nursery and Normal Education	41	Of which 17 top management, 6 secretaries, 13 agents	3	44
Directorate of Private Education	18	Of which 10 top management, 2 agents, 4 secretaries	3	21
Directorate of Examinations and Competitive Examinations	21	Of which 3 top management,		44
Directorate of Health, Post and Preschool Activities	12	Of which 8 top management	16	28
Directorate of Financial Resources and Projects	46	Of which 29 top management, 5 office agent, 1 material accountants, 2 secretaries	30	76
Other Organs				
* National Commission for UNESCO	15	Of which 2 office agents, 1 secretary	4	19
* National Office of Baccalaureate	18	Of which 3 in charge of studies, 1 responsible for the computer service, 1 in charge of archives, 1 in charge of communication	34	52
TOTAL	455		176	631

Source: data collected by author at MINEDUC headquarters, Yaoundé, 2002.

It is noted that public expenditure on education earmarked for secondary schools has been increasing since 1995/96. We also observe that these resources are skewed towards staff salaries to the detriment of current expenditure for the proper functioning of school establishments of which some lack even a minimum level of infrastructure. In 1999/2000, for example, the MINEDUC budget was distributed unevenly. About 70 per cent of the total budget was devoted to staff and personnel and less than 1 per cent to the maintenance of buildings. Further, allocation of these resources to the schools level was not based on clear and well-defined criteria. To illustrate this poor management of financial resources, Table 12.2 shows the distribution of the budget of some public institutions in Centre Province during fiscal year 1999/2000.

Table 12.2: Structure of the Budget of the Main Public Secondary Schools in Centre Province (millions of CFAF)

	Establishments									
	Yaoundé Lecler College	Bafia College	Obala College	Mbalmayo College	Akonolinga College	Eseka College	Nanga Eboko College	M'fou College	Ntui College	Ngoumou College
Expenditures										
Office	15,969	2,504	5,640	6,633	3,641	3,755	3,167	2,930	1,905	1,094
Auto and Machine	3,421	535	1,207	1,170	780	804	676	627	406	547
Maintenance	1,140	178	402	390	260	268	225	209	135	182
Travel	2,281	357	805	780	520	536	451	418	271	365
Miscellaneous										
Office	22,811	3,574	8,054	8,973	5,201	5,363	4,519	4,184	2,717	2,188
Spending										
Total										

Source: author's calculations from State Budget data, 1999/2000.

Data presented in Table 12.2 seem to indicate that the effective supply of the main educational resources (maintenance of physical infrastructure, acquisition of didactic materials, (science) laboratory equipment/material, for instance) is not an important preoccupation of the school authorities. For instance, the General Lyceum Lecler, one of the largest public general secondary schools in the country, has less than 10 per cent of its budget allocated to didactic materials.

The largest share of the budget of that establishment, as in other public and private institutions, is devoted to the functioning of the offices. One can then understand why, despite a situation according to current regulations in which parents pay no school fees, they are regularly solicited through parents/teachers associations (PTA) to help in the acquisition of desks, chalk and other didactic materials.

Table 12.3 indicates the number of students, teachers and classrooms in Centre Province during the 2000/01 academic year. It can be seen that the budget does not depend on the number of students enrolled in each establishment or on the number of classrooms.

Table 12.3: Distribution of Students, Teachers and Classrooms, Centre Province (2000/01 academic year)

Establishments	Budget (CFAF, m)	Number of Students	Number of Teaching Staff	Number of Classrooms	Number of Administrative Staff
Lecler College	22,811	4,256	160	77	12
Bafia College	3,574	856	41	16	8
Obala College	8,054	2,305	86	42	23
Mbalmayo College	8,973	2,244	125	41	33
Akonolinga College	5,201	1,323	50	28	18
Eseka College	5,363	1,361	26	40	11
Nanga Eboko College	4,519	1,236	30	27	5
M'fou College	4,184	1,101	64	26	18
Ntui College	2,717	677	35	15	9
Ngoumou College	2,188	877	42	28	8

Source: author's calculations from data in the *Statistical Yearbook of the Centre Province*, 2002.

From Tables 12.2 and 12.3, it can be seen that there were no criteria for allocating the operating budget of public schools in Centre Province. If we consider the case of Lecler and Mbalmayo high schools, for example, we observe that the latter has an operating budget that represents 41.5 per cent of the former, regardless of the fact that the latter only has 52.72 per cent of the teaching staff, and almost treble the administrative staff. The Ngoumou high school enrolls a higher number of students than the Bafia high school; both schools have the same number of administrative staff, although the Ngoumou high school benefits from a higher operating budget. Inconsistencies in the distribution of the budget can also be noticed through the budget of provincial inspectorates shown in Table 12.4.

As with earlier tables, Table 12.4 illustrates the opacity of the criteria for allocating financial resources to different national school inspectorates considered as the centrepiece of the institutional system. The Centre and Littoral provinces seem to be well off in terms of travel expenses; they have the same number of schools (i.e. 176). But the Littoral Province has a smaller area than the Centre Province, yet their allowances in travel expenses are almost the same (34 million CFAF and 30 million, respectively). Most certainly, these provinces have the greatest number of schools in Cameroon, but they are also the easily accessible (e.g. in terms of road network) of the ten provinces of the country.

Another problem that can be raised is the unequal distribution of schools in the national territory. During the school year 1999/2000, four provinces (Centre, West,

Littoral and North-West) accounted for more than 60 per cent of secondary school establishments, with more than 19 per cent located in Centre Province alone.

Table 12.4: Distribution of the Budget of the Secondary Education Provincial Inspectorates (1999/2000)

Provinces	Adamaoua	Centre	East	Far-North	Littoral	North	North-West	West	South	South-West
Budget	(63,701)	(68,953)	(109,002)	(34,263)	(20,248)	(66,090)	(17,300)	(13,892)	(47,191)	(35,410)
Running the Office	3,756	8,262	3,782	2,188	7,290	2,666	3,472	4,859	2,916	3,644
Maintenance of Cars and Machines	536	-	540	312	1,041	381	496	694	416	523
Fuel and Lubricants	536	2,360	540	312	520	381	496	694	417	520
Travel Expenses	12,000	34,000	14,000	9,000	30,000	11,000	17,000	20,000	12,000	15,000
Operating Expenses	536	1,180	3,210	312	1,041	381	496	698	416	520
Total	17,364	45,802	19,096	12,124	39,892	14,308	21,960	26,945	16,165	20,027

Note: figures in parentheses indicate the areas of different administrative units in sq. km.

Source: author's calculations from data drawn from the budget of MINEDUC, 1999/2000.

More specifically, the spatial distribution of public establishments is biased in favour of urban areas. For instance, of the 63 general education secondary schools in the Centre Province in the 2000/01 academic year, 19, or more than 30 per cent, were located in Yaoundé. When all the secondary general education establishments with a complete cycle in the Centre Province are taken into account, there is an urban bias, as shown in Table 12.5.

Two extreme cases emerge from Table 12.5, namely, the Mfoundi Division, with the smallest area (297 sq. km) but accounting for 65 establishments (i.e. more than half), and the Mbam and Nkim Division, which is the largest (25,906 sq. km) but has just two establishments.

In addition, of the 176 secondary schools in the Centre Province (with first and second cycles), 114, or 64.77 per cent, are connected to the portable water network; 130, or 28 per cent, are connected to the electricity network; 142, or 80.68 per cent, have toilets; 63, or 35.79 per cent, are enclosed by a fence; 73, or 41.47 per cent, have a library; and 95, or 53.98 per cent, are built with temporary materials (MINEFI, *Statistical Yearbook of Cameroon* 1999). From all these data, we can conclude that educational resources are poorly managed. Furthermore, school establishments suffer from deficiencies in basic infrastructure. But the internal efficiency of the educational system is also negatively affected by its inconsistent institutional framework, to which we will turn next.

Table 12.5: Distribution of the Centre Province's General Education Secondary Institutions (2000/01)

Divisions	Populations (thousands)	Areas(km ²)	High Schools	Lay Private Schools	Confessional Schools	Total
Haute Sanaga	108,917	11,854	3	0	1	4
Lekie	335,197	2,989	9	1	2	12
Mbam and Inoubou	125,150	7,125	5	2	1	8
Mbam and Kim	61,758	25,906	2	0	0	2
Mefou and Afamba	81,266	3,338	6	0		
Mefou and Akono	52,564	1,329	4	1	1	6
Mfoundi						
Nyong and Kele	1,201,900	297	9	39	7	65
Nyong and Mfoumu	137,138	6,362	7	1	3	11
Nyong and So'o	123,102	6,172	3	1	0	4
TOTAL	134,989	3,581	5	1	2	8
	2,362,581	68,953	63	46	18	127

Source: author's calculations from data drawn from the *Statistical Yearbook of Cameroon*, 1999:26; MINEDUC, *Provincial Dash Board*, 2000/2001.

An Inconsistent Institutional Framework

The objective of this section is to describe and analyse the institutional framework under which Cameroon's educational system operates. This is an examination of the organizations that prescribe, affect the norms and dictate the rules of the game particularly in the secondary education sector in order to enhance its performance. We have attempted to answer the main question, which is knowing to what extent these institutions (organizations and rules of the game) constitute a hindrance or stimulus to the improvement of school performance. In fact, if these institutions are so highly centralized that they do not leave any serious initiative at the grass roots for decision-making related to the functioning of educational establishments, and if the rules prescribed (construction standards for classrooms, norms related to minimum school equipment, etc.) are not respected by school officials, there is a high probability that they constitute an impediment to the realization of good internal school performance. Likewise, if educational resources are mainly devoted to satisfy rent-seeking bureaucrats, the productivity of public expenditure can suffer even if those resources are increased (Hanushek 1995).

According to some economists and sociologists, institutions embody the set of rules that define relationships between different actors (individuals, enterprises, associations) operating in a society. Institutions are rules enacted in order to facilitate

and coordinate activities of the actors and enable them to carry out activities or transactions. It is about fundamental rules to which all qualified actors have to conform, the moral and ethical rules guiding their behaviour. Generally institutions are the means by which economic, social and political activities are constructed within an organized society. That is the way Ruttan and Hayami (1984), Feeny (1981), Douglas North (1981), etc., define institutions. The preoccupation of these authors is to be sure that these rules are consistent and stable, and do not constitute impediments to development of economic activities. That is why they usually talk about an enabling institutional environment, which allows for good market functioning and increased levels of business activities (Aga Khan Foundation 1987).

According to another school of thought, institutions are the set of organizations that operate in different business sectors of a country. Therefore, problems that arise in analysing institutions are related essentially to the question of how to make them perform better. However, the two aspects of the concept are closely linked (Van Arkadie 1989). For example, poor functioning of public or private organizations and inconsistent and vague rules or norms are possible obstacles to the internal and external efficiency of the educational system. In the present section, we shall first examine the administration of the education system and, secondly, statutory provisions related to the examinations of the Probatoire and Baccalaureate. The objective of the analysis at this level is to discuss the 'vertical collusion' (Laffont 1997) and the 'bureaucratic behaviour' (Aubin 1983; Acheson and Chant 1973), within the MINEDUC headquarters and some related bodies.

The Centralization of Cameroon's Educational Institutions

In Cameroon today, two ministries are charged with oversight of the formal educational system, MINEDUC and the Ministry of Higher Education (MINESUP). MINEDUC designs and enacts regulations in the domain of preschool, maternal, primary and secondary and vocational education; MINESUP carries out similar tasks at the higher educational level.

MINEDUC is heavily bureaucratic, headed by a minister who is a political appointee and whose position seems to be essentially uncertain, since he/she can be removed at any time. From 1960 to 2002, more than 15 ministers have occupied this position, an average duration of 2.2 years per minister. Every new minister comes in with his/her own reforms and policies. Thus it is easy to understand why the syllabus, for instance, is always changing, with new and different policies and responding to new developments in education. This is very detrimental to parents, who are obliged to purchase new textbooks almost yearly. This frequent change in syllabus is also detrimental to students who must adapt to frequent variations in the syllabus; in addition, this offers no advantage to those who repeat classes.

This extensively bureaucratic framework, according to the Decree No, 95/04 of March 1995, is responsible for:

- the moral, civic and intellectual training of students in nursery, elementary and secondary schools and teacher training colleges;

- the definition of pedagogical thrusts and the design of programmes or curricula;
- the organization and operation of public schools;
- the organization and supervision of private schools.

This decree does not provide for collaboration with any other partners in education in the design and implementation of educational policy in the country. As Glewwe et al. (1995) have shown in the case of Jamaica, the impact of the community's implication in the life of schools was not significant. This result for Jamaica has a number of limitations relating to the fact that the participation of the community is measured only by the percentage of parents assisting in the meetings of the parents/teachers associations (PTA) and by a binary variable capturing the effects of the community participation index. In the case of Cameroon, the institutional muddle is such that the PTA, in general, is neither able to influence the functioning of a school nor contribute to its policy direction. Their role is very often limited to bringing in contributions that are intended, in principle, to finance the school or employ additional teachers, but which may end up being used to achieve other ends.

Let it be noted that, in order to carry out its obligations, MINEDUC is endowed with an administrative structure that covers the national territory. At the central level, this structure comprises the Minister's general secretariat, the Minister's private secretariat, two technical advisers, a communication office, a General Inspectorate, a central administration and external services. For the purpose of this chapter, we observe that the General Inspectorate is in charge of the supervision and evaluation of establishments placed under the authority of the ministry. For instance, it can request in writing information or documents from the officials of the services it controls. For each inspection or control mission there is a report. This control is meant to ensure that the schools placed under supervision operate according to rules prescribed by the law, and in the event of failing to do so, there must be some form of punishment or penalty particularly for cases of poor school management or for not respecting technical or teaching standards. But these legal provisions are not always adhered to by both the public and private schools.

As to the central administration, we are interested in four of its structures, which play or are supposed to play an important role in the improvement of the school performance. These are the General Inspectors of Pedagogy (IGP), the General Secondary Education Directorate, the Private Education Directorate, and the Directorate of Examinations and Competitive Examinations.

In effect, the IGP are in charge of the definition and development of curricula and teaching methods of various disciplines. They are supposed to design and prepare pedagogical materials. They also prepare also teachers training programmes. Through its organization, distribution and coordination service, the IGP prepares and distributes pedagogical instruments and surveys National Education Delegations and schools. It is through the IGP that MINEDUC monitors, supervises and evaluates programmes, teaching methods, textbooks, educational materials and teachers. Moreover, the national inspectors (INPs) are in charge of the drafting of the annual evaluation

report on educational activities and the establishment of lists of aptitude for the various pedagogical functions. The IGPs are supposed to play a key role in the ministry, particularly in the supervision of pedagogical norms. National pedagogical inspectors ensure the implementation of this policy. Considering this important mission, National Pedagogic Inspectors should be highly qualified and experienced teachers. Unfortunately, the designation of these professionals appears not to respect such requirements, to judge from many interviews with teachers and some top management of MINEDUC headquarters in Yaoundé. We are informed that they hardly meet those requirements.

Next to the IGPs one finds the General Secondary Education Directorate (DES). The DES is in charge of many overlapping activities, which include the administration and control of public secondary schools, studies related to teaching staff needs in liaison with the National Inspectorates of Pedagogy, studies related to the creation of new public schools, and participating in transfers and changes of the staff of the public secondary school.

This Directorate comprises two specialized services, one in the management of general education at high-school level and the other in the management of secondary education in general.

The third directorate of interest for this study is the Directorate of Private Education (DEP). This directorate is in charge of the following activities: relations with private educational organizations, administrative and financial control of private schools, inspecting private education schools in conjunction with IGPs, studying all requests for operating and opening of private schools, distribution and control of the use of subsidies given by the state, and preparation and exploitation of studies carried out by the National Commission of Private Education.

Lastly, the Directorate of Examinations and Competitive Examinations (DEXC) is in charge of the general organization of examinations and competitive examinations not governed by a supervised organization, broadcasting of examinations results and release of diplomas, examination statistics, and monitoring of organizations placed under supervision.

With regard to the role played by each of these structures, there is a strong likelihood of finding two directorates performing the same activities. For example, the DES is in charge of studies related to the needs of teaching staff in liaison with the National Inspection of Pedagogy. The texts do not provide for specific tasks for each structure. Such is the case of the inspection of private schools, which is carried out by the Directorate of Private Education in liaison with the General Inspection of Pedagogy. The overlapping missions and duties assigned to different technical departments of the ministry generates considerable problems and is a source of inefficiency.

The overlap sometimes creates conflicts, and this is seen more clearly when an activity is placed under the supervision of more than one institution. In the case of the Probatoire and the Baccalaureate of General Education, the controlling institution is the Office du Baccalauréat du Cameroun (OBC), created by Decree No. 93/

255 of 26 September 1993. By Ministerial Order No. 047/CAB/RM of 17 May 1994, concerning the organization the OBC, this office is in charge of the preparation and organization of six official examinations of the Probatoire and the Baccalaureate. In order to achieve its task, the activities of the OBC include the following: issuing diplomas under the supervision of MINEDUC, participating in studies on the evaluation and implementation of the school system, collecting of fees from candidates for examinations under its responsibility, based on the fee levels approved by MINEDUC, carrying out or commissioning under contract research and studies on the examinations it organizes, collaborating with similar organizations and institutions in charge of similar examinations in Cameroon and abroad, receiving grants and other gifts, and publishing and selling research documents, notably documents related to the analysis of examination results and other documents.

The collaboration of OBC with MINEDUC mentioned here represents a case of overlap and duplication. In effect, MINEDUC supervises this office. On that account, OBC sets up and administers the programmes as well as the schedules of all its examinations. It issues Baccalaureate diplomas, which are jointly signed by its Director and the Minister of Higher Education. The examination involves many activities.

In sum, by transferring to the OBC the management of some official examinations, the Ministry shows some willingness to decentralize. Despite its supposed financial autonomy, the OBC is under the supervision of MINEDUC; a supervision that is justified by the sensitive nature of the OBC's missions. Moreover, the OBC has been accused of malpractices (such the issuing of false attestations, leakages of examinations questions etc.). These fraudulent practices are carried out in an environment characterized by 'intellectual misery' (Le Forum des Universitaires Chrétiens' 1997). It is also encouraged by the 'impunity' highlighted by a number of authorities in the Cameroon context (see Cahiers africains des droits de l'homme 2000). These malpractices are reflected in different ways described by Laffont (1997).

Furthermore, in a normal situation, one may ask whether it is judicious for the OBC to participate in the evaluation system through the organization of examinations, and not associate itself with the design and development of programmes and teaching methods of various disciplines. All these tasks are given to the National Inspectorate of Pedagogy, which carries them out without any legal obligation to associate with other bodies. At the schools level, Decree No. 2001/041 of February 2001 organizes and controls the attributions of officials of the school administration. It should be noted that this decree solely deals with the public schools created by the state or public organs. According to this decree, a public school is composed of the physical and legal entities of the community within which it is created. The actors of the educational community collaborate with many other educational organs and groups.

By defining the educational community, Cameroon's educational authorities try to transform the schools into a meeting place for different socio-economic groups in an attempt to create a partnership likely to improve school performance, notably, the quality of education. Among these institutions, we find the school council as the

main organ of supervision, advice, deliberation, control and evaluation of general secondary educational establishments.

Given the importance of this objective, the activities of the establishment and the school council seem to be indispensable to the educational community. One can interpret the creation of such an organ as the willingness of the educational authorities to associate communities at the grass roots with the management of schools. However, as conceived, it presents certain weaknesses: no deadline is given to set up school councils in all establishments; the new institution is only for public schools and excludes private schools that receive government subsidies; there is no provision in the decree to indicate the actual power the school council can exert on the heads of its establishment; and public authorities (at headquarters level and in the schools) are not bound by the views expressed by the schools council. In the past, the management committees that preceded the schools councils did not function efficiently because their members lacked meaningful levels of motivation or incentives. It is curious to realize that the above-mentioned decree has provided no incentives for members of the school council whose one important mission is to assess their school's performance. The outcome of these limitations is the poor performance of the school system.

Furthermore, the 1996 constitution gives provision for decentralization such that 'collectivities' and localities even in rural areas play an important role in the functioning of the educational system (Prud'Homme 1995; Matte and Sancho 1991). In addition the finance bill for the fiscal year 1995/96 stressed decentralization. In principle the resources generated by national education were to be directly allocated to the improvement of the quality of education. In application of this principle, a management committee was created in each public school, which was intended to supervise the management of the school including the school's finances, with the minister appointing the officials of the committee.

It would be difficult to regard this evolution as demonstrating government commitment to the policy of decentralization. The 1996 constitution, for example, did not provide for the contribution of municipalities to the financing of schools. In spite of official pronouncements, centralization remains a major political option for those authorities. Then, another decree shifted the presidency of the committee from a representative of local council to a nominee of the central government. No clarification is given on the place of residence of the person presiding over the management committee and her/his relationship with the school. Replacing an elected president of the school management committee with an appointee has created conflicts in different communities, thus paralysing the functioning of these committees. One can therefore speak in terms of the slowing down of the decentralization process, despite Law No. 98/004 of 14 April 1998, which clearly stresses the participation of families and communities in the implementation of educational policy at all levels. This principle of decentralization in the education sector is somewhat undermined by the same law whose article 13 states of specific text of application.

More importantly, recommendations formulated during the Forum on Education have not been implemented. For example, the National Commission on Good Governance within which was instituted the Commission for Decentralization has discussed the nature of the social services that fall under the responsibility of local councils. The government accepted the report of the commission but nothing has been done since then. The report brought out problems linked to investment, infrastructure, training of trainers and community development that do not formally appear in the existing texts but are critical for the proper functioning of the different committees created (Tanawa et al. 2000).

In short, analysis of the institutional framework of Cameroon's education system reveals serious inconsistencies. Decentralization was meant to be an important determinant of efficiency but remains to be implemented. Despite the many speeches and the well-designed regulatory framework, not much has been realized in practice. There is a contradiction between the related local communities in the management of the education system and excessive centralization of major decisions at the headquarters of MINEDUC in Yaoundé. Instead of moving towards more involvement of the whole educational community in the implementation of national education policy, successive reforms of MINEDUC have ended up expanding the bureaucracy in the ministry (see Table 12.6).

**Table 12.6: Change in the Administrative Structure
of the Headquarters of MINEDUC**

Administrative Posts	Years and Numbers		
	1984	1995	2002
Private Secretariats	2	1	1
Secretaries General	1	1	1
Technical Advisors	2	2	3
Cells	1	4	12
General Inspectorates of Pedagogy	3	3	9 and undefined assistants
General Administrative Inspections	-	1	5
General Teaching Inspections	-	3	1
Directorates	8	9	10
Divisions	1	0	2
Sub-Directorates, Assistant Directorates	10	2	17
in Charge of Studies			
Services	41	46	78
Total	69	72	140

Source: author's calculations from data collected at the headquarters of MINEDUC organisation charts, 2002.

There are also other positions created at the external services (provinces, divisions and sub-divisions), and those created in organs under MINEDUC tutelage (National Commission for UNESCO, Office du Baccalauréat du Cameroun, the General Certificate of Education Board, Pedagogic Institute for Rural Vocation) or those existing in consultative institutions such as the National Council for School Books

and Pedagogic Material, the Permanent Council for Discipline, the National Council for Education, the National Commission for Private Education, the Governance Observatory, and other posts foreseen in the Decree of 4 January 2002.

On the other hand, the institutional framework defined by the authorities in the education sector has not resulted in creating conditions and an environment favourable for the better performance of teachers and students. If we consider the teachers, it can be noted that they have been demoralized and are not motivated. Their eagerness to work has been seriously undermined. For instance, one can note the two drastic cuts in salaries in 1993. In effect, civil servants' salaries fell by more than 50 per cent in January 1993 compared to their level in 1992, and the position has not improved since then. It is therefore easy to understand the confusion of teachers who see their purchasing power drop every day while other public servants are better treated. The teachers have therefore organized themselves into unions to demand increases in their salaries and better working conditions. These demands have frequently resulted in strike action, which has ended up in a net reduction in the quality of education.

Decree No. 2000/359, of 5 December 2000, defines the particular status of civil servants in National Education and has set a profile for a teaching career as well as indicating criteria for promotion. As usual, the decree is still to be applied. While waiting the application of that decree, appointment to administrative posts continues to be made on a non-transparent and non-objective basis. The increase in administrative posts gives way to 'vertical collusion' (Laffont 1997) as a source of rent-seeking and corruption. Yet the Economic Commission for Africa (2001:23) recommends that appointment of people responsible for regulation of national activities be made according to rules of competence and professionalism rather than on a political basis. During the Forum on Education it was acknowledged that the appointment and transfer policy of teachers had still to be clearly defined. This has been another cause of frustration for the teachers.

Moreover, the centralization of the decision-making process in Yaoundé is highly detrimental to both students and teachers. Teachers leave their classrooms and students to pursue administrative documents because of the red tape of the central services in Yaoundé. This practice goes against many decisions and policy statements made including that of the Forum on Education (MINEDUC 1995). Some teachers even think that the education authorities lack the imagination and ability necessary to understand and tackle the numerous problems they face daily in their family and professional life (see Kaffo Fokou 2001). That situation has resulted in some teachers engaging in unofficial activities aiming at gaining extra income (abandonment of their working place, marks traffic, parallel activities and so on). Such activities are highly detrimental to the quality of teaching and to the teaching career. Finally, analysis of the administrative structure of Cameroon's educational system shows that decentralization, meant to encourage a new era of efficiency, still remains unfulfilled, despite the speeches and the design of a legal and regulatory framework.

A Centralized and Poor System of Evaluation

An appropriate system of evaluation can undeniably influence school performance as measured by the repeat rate or success rate in official examinations. In other words, the system of evaluation is as important in our study as general administration, pedagogical practices, the school and family environment and community participation. The system of evaluation in force in Cameroon suffers from structural weaknesses that were raised during the Forum on Education. These included:

- absence of control and follow up of examiners for francophone examinations;
- multiplicity of examination centres with no proper control and follow up;
- non-uniform marking scheme for the same subjects and correction versions, coupled with the fact that candidates are not always aware of the content and criteria of their evaluation;
- subjectivity of oral and practical examinations;
- leakage of examination questions and frauds;
- insufficient examination material;
- non-training of examiners for the francophone and technical examinations;
- bad organization and dispatching of documents related to examinations (registers, records, examinations questions, etc.), delay in the publication of results;
- failure to adhere to the examinations calendar; and
- delay in issuing and delivery of diplomas and certificates.

No satisfactory solutions have been found to these problems, and most remain unsolved. One frequent criticism of the system of evaluation is the multiplication of texts that govern official examinations. We shall examine the common provisions relative to both the Probatoire and Baccalaureate, and also look at provisions specific to each of these examinations. Let us note that up to 1995 the DEXC was in charge of managing all the secondary education examinations, while from 1996 the OBC took over both examinations.

At all levels of the schooling system, leakage of examination questions and frauds of various kinds in public examinations are major problems that continue to undermine the system of evaluation. To tackle the problem, Ministerial Decree No. 345/B1/1464/MINEDUC/CAB of 7 June 2000 instituted a committee to find better ways to conduct all examinations of MINEDUC. According to article 2 of that decree, the general objective of the committee was to render the system of evaluation more credible. Specifically, it was intended to reform the management of official examinations and competitive examinations, and increase the security and confidentiality of the organization.

It was known that leakage can occur at many levels including that of preparation of tests, typing, and multiplication of questions or copies. The generalization of leakage renders the system of evaluation non-credible. Frauds in examinations involve many aspects (particular marks on the writing papers, disclosure of the anonymity

code, substitution of writing papers, and marks falsification etc.). In spite of the harmful effects of leakage and frauds on the system of evaluation, recommendations made by the committee to eradicate these malpractices remain to be implemented. One of the most forceful recommendations was the selection of honest, competent, qualified and experienced teachers with an acknowledged moral profile to manage the system of evaluation.

More specifically, common provisions on both the Probatoire and Baccalaureate examinations cover official pronouncements on the manner in which these examinations are to be managed. These are Circulars No. 13/BI/1464/MINEDUC/SG/DEXC of June 2001 on instructions relative to the 2001 examinations; No. 33/C/23/MINEDUC/SG/DEXC/SDRC of 29 June 1990, organizing deliberations of Baccalaureates and Probatoires of secondary education; and No. 07/C/23/MINEDUC/DEXC of 12 February 1988 organizing official and competitive examinations. According to the latter circular, the provincial delegate representing MINEDUC staff in the province exerts his/her authority on examinations and competitive examinations. S/he is the general coordinator of these examinations. As such, s/he proposes the juries' presidents, chiefs of centres and sub-centres to be appointed by the Minister of National Education. S/he appoints the chief and the members of the secretariat of the examinations the territory s/he controls. Despite those responsibilities given to the provincial delegates, the first sign of centralization manifests itself through the fact that the common materials (examinations writing paper and paper for rough work) are acquired by the DEXC. These materials are then taken to the examination centres. The financial resources are transferred to the chiefs of centres and sub-centres through the provincial delegations.

The chief of the centres and sub-centres are in charge of the organization of examinations (preparing classrooms, all the material necessary for the proper functioning of examinations, like chalk, envelopes, folders, calculators, etc.). A second level of centralization is that the Minister of National Education appoints the chief of centre, whereas the provincial delegate knows the school officials better.

The examination questions also constitute a link in the chain of evaluation and the functioning of structures participating in the management of the examinations. In general, questions are proposed by teachers in charge of classes, i.e. those actually teaching. These teachers must effectively teach classes at the examination level for which the questions are proposed. The questions chosen are put together and sealed at the central level and sent to provincial delegations. In their turn, the provincial delegations transport them to the departmental delegations where they are given to chiefs of centres and sub-centres. The latter takes possession of these packages and distribute them on the day of examination to secretariat chiefs.

This system of evaluation has deficiencies. The texts are clear on the criteria for appointing the teachers whose job is to develop and propose examination questions. But in practice their appointments are subject to criteria that many of teachers we interviewed consider as being confused and hazy. Despite the quality requirements as clearly stated in the texts, which moreover prescribe the preliminary study of the

examination questions by national pedagogical inspectors, anomalies constantly occur: questions comprising serious errors and sometimes false questions may not always correspond to the existing syllabus, questions accompanied by incomplete answers or false answers, etc.

The personnel designated to various evaluation tasks are not always appropriate. During the 2000/01 session, for example, it happened there was the same teacher acting as jury president at more than one examination and at different examinations centres. He was also in charge of deliberation in more than one centre. Yet the teacher could not be everywhere at the same time. This multiple positions resulted in frustration of other teachers and delays in the evaluation process (see *La Voix de l'Enseignant*, No. 25, September 2001).

The invigilation of examinations constitutes an integrated part of the process of evaluation. In accordance with the provisions of the Ministerial Circular of 8 June 2001 mentioned above, the invigilation of examination rooms must be exclusively ensured by the teaching staff, and exceptionally the school directors might be called in. The said circular states: 'To be appointed invigilators, teachers coming from the private sector must be permanent teachers in their school and be proposed by their headmasters'.

In practice, however, the choice of people at this level poses the same problems as raised above despite what is clearly stated in the circular. Moreover, secondary education is experiencing other problems in the system of evaluation that may influence the results of official examinations. This concerns fraud, which is constantly reported during official examinations. During the 2000 session, for instance, 50 students were suspended for a period of three years for having actively participated in the leakage of examination papers (see Ministerial Circular No. 380/B1/10529/MINEDUC/CAB/SG/DEXC/SOEC of 8 June 2001, MINEDUC for fraud). It must however be noted that this decision was made only in June 2001, many months later.

We also note that reduction of pass levels is common, which results in the acceptance of candidates whose levels of education is deficient. For example, Ministerial Circular No. 32/C/23 of 29 June 1990 on the organization of the deliberations on Baccalaureate and Probatoire examinations of secondary education mentions the case of students whose average grade fell between 8/20 and 10/20. But it happened very often that the grades were lowered below the average grade of 08/20, thus raising the success rates artificially. Other forms of frauds exist: substitution of examinations papers, breaking codes of anonymity, violation and leakage of examination papers etc., as indicated above.

In sum, the institutional framework already described shows that the educational system tends to generate very poor outcomes partly because of the inconsistencies present in the regulatory provisions.

Some Regulatory Provisions on Examinations

We start with some observations on the Probatoire examination. The 1995 Forum on Education had recommended the suppression of this examination, and law

No. 98/004 of 14 April 1998 ratified that recommendation. Despite these legal provisions, the Probatoire examination continues to be a *sine qua non* to pursue studies to the upper six level. Secondly, we can cite another sign of institutional inconsistency relating to the Probatoire examination. According to article 2 section 2 of order No. 015/B1/1043/A/MINEDUC, of 22 March 1995, the organization of the Probatoire falls under the Office du Baccalauréat du Cameroun. Unfortunately, even minor decisions concerning that examination continue to be taken by MINEDUC at headquarters level (in terms of the date of the examination, appointment of jury members, selection of examination centres, professional options and specialties, the nature and duration of examinations, etc.).

The Baccalaureate examination suffers from the same problems. In general it might be said that the inconsistency of the system can only impact negatively on the credibility of educational policy, and consequently on its performance. The continuing centralization and disregard of the rules of the game are the most important impediments to the development of the education system in Cameroon.

Poor management and an inconsistent institutional framework have led to the internal inefficiency of the educational system as measured by the success rates in official examinations. This can be seen in Table 12.7.

Table 12.7: Development of Secondary School Examinations Results

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Official Examinations							
BEPC							
Registered	120,789	99,621	98,600	117,517	122,571	119,262	107,001
Passed	44,178	25,721	18,500	16,455	35,502	43,388	41,092
Success rate(%)	36.57	25.82	18.76	14.00	28.96	36.38	38.40
GCE O level							
Registered	Na	14,896	18,253	17,624	17,578	17,218	20,432
Passed	Na	5,222	8,052	7,802	8,798	5,591	10,181
Success rate(%)	Na	35.06	44.06	44.27	50.05	32.47	49.83
Probatoire							
Registered	82,021	80,121	94,520	66,683	58,546	43,608	56,059
Passed	24,237	14,585	10,449	18,033	27,141	19,498	33,141
Success rate(%)	29.55	18.20	11.05	27.04	46.36	44.71	39.50
GCE A level							
Registered	Na	8,568	10,547	10,117	11,107	11,629	13,801
Passed	Na	4,005	5,122	4,242	5,492	5,199	7,331
Success rate(%)	Na	46.74	48.36	41.95	49.45	44.71	53.12
Baccalaureate							
Registered	47,904	39,132	40,500	28,577	33,931	31,226	30,737
Passed	13,562	10,325	4,980	2,563	17,622	19,651	10,367
Success rate(%)	28.31	26.39	12.30	26.47	51.93	62.93	33.73

Na = not available.

Source: *Statistical Yearbook of Cameroon*, 1998:52 and 1999:81-3.

Table 12.7 reveals the very low success rates in official examinations in Cameroon and moreover illustrates decreasing numbers taking some examinations. On the average, only 34 per cent of the candidates in official examinations during the period under consideration were successful.

In general, there is one striking conclusion to be drawn from analysis of the official examinations of secondary education in Cameroon: that despite the best efforts of government and other stakeholders in the educational sector, results are not improving accordingly; indeed, since 1995/96, the results of BEPC (the first-level certificate in secondary education) appear to be worsening.

Conclusion and Recommendations

The problem raised at the beginning of this chapter is that continuous efforts made by the Cameroon government in the educational sector have not resulted in improvement in the internal efficiency of the educational system. The success rates in official examinations have been particularly disappointing. Furthermore, to solve the multiple problems that faced Cameroon between 1985 and 1995, certain socio-economic measures were implemented to permit more involvement of the private sector in the supply of educational services. But the proliferation of private schools can threaten the internal efficiency of the educational system in the absence of a clear, comprehensive and consistent institutional framework. The poor management of educational resources, both in the private and public sectors, has exacerbated the the internal inefficiencies of the school system.

Within this context, the main objective of the present study has been to show that educational resources are poorly managed and that the institutional framework governing the school system is not credible. These inconsistencies have profound negative impacts on the internal efficiency of the educational system. We carried out a critical analysis of the institutional framework by examining existing legal and regulatory texts, and other resolutions taken by the government during different public forums on education.

One of the important results of the study is that the main stakeholders intervening in the system do not always respect the rules defined to orient and facilitate the functioning of the institutions of national education. Surprisingly, it is the government, which purports to take care of the general interest, and to be a neutral and impartial referee, that appears to be the first offender against laws and regulations that govern the education system. Furthermore, educational resources are poorly managed, and action should be taken to improve on the school performance.

Fundamentally, acceptance of the rules of the game by all stakeholders is an important step towards any improvement in school performance. Objectivity and transparency should be the main basis for appointments in all administrative posts (both at central and provincial levels). Implementation of the career scheme defined by the Presidential Decree of 5 December 2000 cited in the study should be a decisive step to the rational management of human resources in the education

sector. We believe that priority should be given to specialists in public management, particularly for school and university administrators. Teachers have been appointed to administrative posts essentially on a discretionary basis. In many cases, those teachers are qualified and even experienced in their domain. Yet we should recognize that they are not necessarily trained for school or the public management, which cannot be acquired merely through refresher courses or seminars. A good mathematician or a good philosopher, for instance, is not necessarily a good manager of human resources.

In any case, teachers should be transferred to classrooms and supervising activities, and not to administrative posts. Allowing teachers to teach would contribute to solving important problems facing Cameroon's education system. First, a rational allocation of human resources would aim at reducing in the bureaucracy in MINEDUC, a source of inefficiencies. The current trend of bureaucratic expansion seems to obey the misplaced logic of creating the maximum number of administrative posts where more teachers will be appointed. Secondly, almost 600 teachers currently occupy administrative posts at the headquarters of MINEDUC. Some of those teachers do not have a precise administrative function and are used as simple administrators. The number would surely double or even treble once the gigantic organizational chart created by Presidential Decree No. 2002/004 of January 2002 organizing MINEDUC becomes effective. But this can be stopped by applying the appropriate provisions of the 1996 constitution in promoting administrative decentralization. Thus, one can understand how the reorientation of teachers towards teaching and reduction of the MINEDUC administrative apparatus would increase the numbers of teaching staff, which are presently insufficient in public schools. By doing this, the student/teacher ratio should also be improved and with this, eventually, the internal efficiency of the educational system.

We recommend that financial resources obtained through the reduction in the administrative apparatus be reallocated to priority teaching activities (such as incentives for teachers, maintenance of physical infrastructure, acquisition of pedagogical equipment). In the same direction, we reiterate one recommendation made during the Forum on Education (1995), which insisted on the necessity of making the teaching profession more attractive. Teaching has become a stepping-stone to better jobs for those who have not been able to get into high-paying jobs in the army, police, judiciary and diplomatic corps. Alongside this, many teachers, who have remained in the profession because they have been unable to secure better-paying jobs, have given in to parallel activities in order to increase their income. Other teachers continue to stay in the profession and try, by all means, to obtain a coveted administrative post. This is a source of rent-seeking activities and corruption, as described by Laffont (1997).

Rendering the profession of teaching attractive implies the effective implementation of laws, regulations, and other recommendations. However, it is also important to make the whole school system more credible by applying the April

1998 law mentioned above. In effect, it is crucial and urgent that the government presents itself as a model or reference for due respect of social, political and economic rules. Cameroon should move from the present situation dominated by 'the rule of state law' to one where the 'the rule of law' dominates (Coorter 1997).

References

- Acheson, K. and J.F. Chant, 1973, 'Bureaucratic Theory and the Choice of Central Bank Goals: The Case of Bank of Canada', *Journal of Money, Credit, and Banking*, Vol. 5, pp. 77–95.
- Aga Khan Foundation, 1987, *The Enabling Environment*, Report of Conference held in Nairobi, Kenya, 21–24 October 1986.
- APDHAC, 2000, *Impunité en Afrique Centrale*, Cahiers africains des droits de l'homme, no. 3, février, Études et documents de APDHAC, Yaoundé: Presses de l'Université Catholique d'Afrique Centrale.
- Aubin, C.H., 1983, 'Intégration du comportement de la Banque centrale dans une analyse positive de la politique monétaire', Thèse de Doctorat d'État, Poitiers: Université de Poitiers.
- Becker, G.S., 1975, *Human Capital*, 2nd edn, New York: National Bureau of Economic Research.
- Boissière, M.X., J.B. Knight and R.H. Sabot, 1985, 'Earnings, Schooling, Ability, and Cognitive Skills', *American Economic Review*, Vol. 75, No. 5, pp. 1016–30.
- Cameroon, Republic of, 1986, *Sixth Five-Year National Economic, Social, and Cultural Plan (1986–1991)*, Yaoundé: SOPECAM.
- Collier, P. and J.W. Cunnig, 1999, 'Explaining African Economic Performances', *Journal of Economic Literature*, Vol. 37, No. 1, pp. 64–111.
- Coorter, R.D., 1997, 'The Rule of Law and the Rule-of the-Law State: Economic Analysis of the Legal Foundations of Development'. In: Michael Bruno and Boris Pleskovic, eds, *Proceedings of the Annual World Bank Conference on Development Economics*, Washington, DC: World Bank.
- Easterly, W. and R. Levine, 1997, 'Africa's Growth Tragedy: Policies and Ethnic Division', *Quarterly Journal of Economics*, Vol. 112, pp. 1203–50.
- Economic Commission for Africa, 2001, *Transforming Africa's Economies*, Economic Report on Africa 2000, Addis Ababa: ECA.
- Ermisch, J. and M. Francesconi, 2001, 'Family Matters: Impact of Family Background on Educational Attainments', *Economica*, Vol. 68, pp. 137–56.
- Feeny, D., 1988, 'The Demand for and Supply of Institutional Agreements'. In: V. Ostrum, D. Feeny and H. Picht, eds, *Rethinking Institutional Analysis and Development*, San Francisco: International Centre for Economic Growth, pp. 50–78.
- Glewwe, P., 2000, 'Education'. In: M. Gosh and P. Glewwe, eds, *Describing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of LSMS*, Washington, DC: World Bank.
- Glewwe P., M. Grosh, H. Jacoby and M. Lockheed, 1995, 'An Eclectic Approach to Estimating the Determinants of Achievement in Jamaican Primary Education', *World Bank Economic Review*, Vol. 9, No. 2, pp. 231–58.
- Gupta, S., K. Honjo and M. Verhoeven, 1997, *The Efficiency of Government Expenditure: Experience from Africa*, IMF Working Paper No. 97/153, Washington, DC: IMF.

- Hanushek, E.A., 1995, 'Interpreting Recent Research on Schooling in Developing Countries', *World Bank Economic Research Observer*, Vol. 10, No. 2, pp. 227–46.
- Jimenez, J.D., V. Ouadrini and J.V. Rios-Rull, 1997, 'Dimension of Inequality: Facts on the US Distribution of Earnings, Income, and Wealth', *Federal Reserve Bank of Minneapolis Quarterly Review*, Vol. 21, No. 2, pp. 3–21.
- Kaffo Fokou, R., 2001, *Les générations sacrifiées*, Dsachang: Éditions S.L.
- Laffont, J.J., 1997, 'Collusion et information asymétrique', *L'Actualité économique, Revue l'analyse économique*, Vol. 73, No. 4, pp. 595–609.
- Le Forum des Universitaires Chrétiens, 1997, *La misère intellectuelle au Cameroun*, Yaoundé: Centre Catholique Universitaire.
- Lockheed, M.E. and A.M. Verspoor, and Associates, 1992, *Improving Primary Education in Developing Countries*, Washington, DC and Oxford: World Bank and Oxford University Press.
- Lucas, R.E., 1988, 'On the Mechanism of Economic Development', *Journal of Monetary Economics*, Vol. 22, pp. 3–22.
- Matte, P. and A. Sancho, 1993, 'Primary and Secondary School Education'. In: Christian Larroulet, ed., *The Chilean Experience: Private Solution to Public Problems*, Instituto Libertad y Desarrollo and The Centre for International Private Enterprise: Trineo S.A.
- Mincer, J., 1989, 'Human Capital and the Labour Market: A Review of Current Research', *Educational Researcher*, pp. 27–37.
- MINEDUC (Ministry of National Education), 1995, *États Généraux de l'Éducation. Rapport général*, Yaoundé.
- MINEDUC, 1999, *1999 Statistical Year Book of Cameroon*, Yaoundé.
- MINEDUC, 2000, *Réunion de Concertation des Responsables des Services Centraux, Extérieurs et Sous-tutelle du Ministère de l'Éducation Nationale, Rapport général*, Yaoundé.
- MINEFI (Ministry of Finance), 2000a, *Rapport économique et financier*, Yaoundé.
- MINEFI, 2000b, *Statistiques Générales sur le Système Éducatif Camerounais en 1999/2000*, Yaoundé: DSCN.
- Moreaux, M.F. and P. Lhermet, 2000, *Rapport relatif à la gestion du personnel du MINEDUC du Cameroun: Diagnostic et recommandations*, Washington, DC: World Bank.
- North, Douglas, 1981, *Structure and Change in Economic History*, New York: Norton.
- Ntangsi, J., 1995, *Éducation et ajustement structurel: Communication présentée aux États Généraux de l'Éducation*, Yaoundé, 22–27 Mai, Yaoundé.
- Prud'Homme, R., 1995, 'The Dangers of Decentralisation', *World Bank Research Observer*, Vol. 10, No. 2, pp. 201–20.
- Psacharopoulos, G., 1994, 'Returns to Investment in Education: A Global Update', *World Development*, Vol. 22, No. 9, pp. 1325–43.
- Ruttan, V.W. and Y. Hayami, 1984, 'Toward a Theory of Induced Institutional Innovation', *Journal of Development Studies*, Vol. 20, No. 4, pp. 203–23.
- Schultz, T.P., 1988, 'Education Investments and Returns'. In: H.B. Chenery and T.N. Srinivasan, eds, *Handbook of Development Economics*, vol. 1, Amsterdam: Elsevier Science Publishers B.V.
- Tafah, E.E.O., 1994, 'The Economics of Education Investment in Cameroon', Ph.D. Thesis, Lagos: University of Lagos.

- Tanawa, E., I. Noumba, A. Bopda, E.M. Bell and T.M. Yimgaing, 2000, *Les processus de décentralisation et leurs incidences sur les services sociaux de santé et d'éducation*, Rapport de recherche adressé au CRDI, Canada.
- UNESCO, 1985, *Cameroun: Études sur l'enseignement et la formation*, vols 1 and VII, Paris: UNESCO.
- UNDP, 1997, *Human Development Report*, New York: UNDP.
- Van Arkadie, B., 1990, *The Role of Institutions in Development*, Proceedings of the World Bank Annual Conference on Development Economics, 1989, Washington, DC: World Bank.
- World Bank, 1995, *Priorities and Strategies for Education: A World Bank Review*, Development in Practice, Washington, DC: World Bank.

Public Provision of Health Care in Cameroon: Policy Choices and Options

Ntembe Augustine Ntembe

Introduction and Background

Cameroon made considerable progress in its social and economic development over the three decades following independence in 1960. The government embarked on a policy aimed at providing total coverage of the population in all aspects of health care in a progressive manner. These aspects of health included preventive and curative care and health education. The phenomenal growth in health care institutions during this period was reflected in the significant improvement in the health outcomes of the population. However, during the previous decade, health indicators deteriorated dramatically. Infant mortality rate estimated at 65 based on the 1991 Demographic and Health Survey (DHS) increased to about 77 per thousand in the 1998 DHS. Maternal mortality stagnated during most of the 1990s at 430 per 100 000 live births but remained relatively high. During recent years, some of the indicators have recorded progress although these remain inadequate in relation to the millennium development goals.

The general decline in health indicators highlights significant problems in the health care delivery system, which include inefficiencies in the allocation of public resources across facilities and regions in addition to a poorly functioning referral system. The deterioration in health indicators has been further exacerbated by a rise in the spread of the HIV/AIDS epidemic. HIV prevalence in Cameroon is estimated at 5.5 per cent. In the absence of any existing therapeutic cure or vaccine for the infection, the disease constitutes a serious threat to the socio-economic development of the country. The rise in government expenditure committed to the fight against the pandemic is likely to strain expenditures for other programmes in the near future if major steps are not taken to reduce the spread in transmission of the disease.

The public sector is the most important provider of health services in Cameroon and has relied on general revenues for financing these services. The revenues are in turn generated through direct and indirect taxes, and budgetary deficits supported

by domestic and foreign borrowing. Budgetary shortfalls during the period of economic decline forced the government to make painful choices in regard to the financing and provision of health services. Cost recovery was thus introduced as a mechanism of raising additional revenue for quality improvement and freeing public resources that could be reallocated to cost-effective services. While the introduction of cost recovery was expected to raise funds for the health sector, it could not replace government's role in the financing of health care. Although this role is essential in promoting efficiency and equity, public funds are skewed towards high-level tertiary services at the expense of cost-effective services.

Given the important role of government in health care provision, it is of primary importance to investigate changes in public expenditure on the health sector over time and how it affected health care, to determine whether the government should continue to invest in the sector and the type of interventions on which to spend public money. Equally of first importance is the need to know what local communities and the private sector are expected to contribute to the shortfalls in public health financing. This is in part determined by the influence of prices paid for the use of health care services and household incomes on the demand for health care. This study sets out to address these issues. Based on empirical findings, a number of recommendations are presented on how policies and programmes can be made more effective in improving health outcomes, thus reducing mortality especially among mothers and infants.

The main purpose of this chapter is to analyse household responses to the introduction of user fees into government health facilities and to determine whether or not government should provide health services, and if it should to determine the type of services that should be provided. To achieve these objectives, we shall first estimate the effects of prices or cost of health care on utilization and then determine the effects of government intervention on health outcomes particularly infant and maternal mortalities. Later on, we establish a link between health outcomes and interventions relevant to the health sector and particularly verify if public money is more effectively spent on cost-effective services than on curative services.

The Institutional and Health Policy Framework

Besides being a major provider of health services the Government of Cameroon defines health policy and also manages the health system. The organization of the Cameroon health system distinguishes three distinct levels in the national health system, namely: the central level at the top of the health system, the intermediate level, and the district level at the bottom. The structure of the health system organization is such that more care is delivered at the district level than at other levels taken separately. While this is the situation on the ground, the effectiveness of service delivery at this level remains low. As the bulk of government investment on human resource formation, facilities and equipment is concentrated on health services provided at the tertiary level of the system, the urban elite tends to be the primary beneficiaries of such investments. Since the allocation of resources does

not seem to respect any established norm, about 60 per cent of the budget of the Ministry of Public Health (MOPH) is managed at the central level. The heavily centralized management system does not allow for the free flow of information, thus creating opportunities for fraud, rent-seeking and inefficiency in the public health sector.

In 1999, the Ministry of Public Health operated a total of 1,362 hospitals and health centres. Many other facilities are operated by the private sector, particularly religious bodies. In 1999, of the 1,689 health centres and 339 hospitals, the private sector operated 579 and 87 health centres and hospitals, respectively. Public and private sectors play complementary roles in the provision of health care and delivery in terms of quality and equity. The promotion of these complementarities is intended to reduce direct intervention of the MOPH in the supply of resources from the private sector. In addition to the MOPH, a number of state-owned enterprises, the Ministries of Defence, National Education and Higher Education also provide some health services. Table 13.1 summarizes the position.

Table 13.1: Health Facilities, 1981–1992, 1997–2000 (numbers)

Facility	1985	1986	1990	1992
Hospitals	238	247	243	243
Health Centres	756	755	884	882
* MCH/Maternity Facilities	83	97	62	62
Dispensaries	544	548	312	312
Pharmacies	142	157	215	215
Facility	1997	1999	2000	
National and Provincial Hospitals	15	15	15	
District Hospitals	212	130	130	
Assimilated District Hospitals	68	192	191	
Leader Health Centres	866	976	977	
Other Health Centres	473	713	713	
Pharmacies	229	225	237	

MCH =Mother and Child Health Care.

Source: NIS/*Cameroon in Figures*, 1983–97; MOPH, *Carte Sanitaire*, 2001.

For the period 1980–92, health allocations accounted on average for 5 per cent of total central government budgets. However, these allocations felt short of the 10 per cent recommendation of the World Health Organization. The rapid economic growth and the priority accorded to the health sector were reflected in the expansion of the network of health structures and medical personnel. In 1992, there were over 40 public and private schools in the country that trained paramedical personnel (Republic of Cameroon 1992). This expansion had substantially increased the number of health personnel since 1960. Despite this increase, there remains a considerable disparity in the distribution of personnel within health facilities as a majority of professionals are concentrated in hospitals serving urban and semi-urban areas. Presently, there is a doctor per 9,764 inhabitants and a nurse for each 2,214 inhabitants at the national level while in the Far North Province, for example, the ratio declines

to one doctor per every 31,102 inhabitants, and 6.205 inhabitants per nurse (Republique du Cameroun 2001). Another inherent issue is that distances to facilities are often too far and patients incur high costs while travelling to health facilities. At the national level and on average, about 29 per cent of the population covers more than 30 km from a principal health centre to a district hospital.

The present orientation of government health policy is towards the decentralization of the health care delivery system in addition to increasing the private role in health care delivery. This is expected to upgrade the quality of services and expand access to meet the rising needs for health care of a growing population.

The 1992 Health Care Policy Changes

The health policy in Cameroon has evolved significantly since 1960. In 1982, a primary health care system was introduced. This system was also aimed at making health care accessible to all individuals and to all members of the community with their full participation, providing health care at a cost that the community and country could afford at all stages of their development. The strategy put in place was based on the promotion of village health through health posts, but this did not yield good results. Health care reforms were adopted in 1992 based on the decentralization of health care delivery, an emphasis on primary health care and the participation of beneficiary communities in co-financing and co-management of health care facilities (République du Cameroun 1992). The government's health policy reforms stress equity, increased access to health services, better quality, availability of generic drugs, and the fight against infectious diseases

The 1992 reforms introduced user charges in government facilities so as to raise more resources for the provision of health services. This implied that households had to pay for health services before using them. This approach to health care financing was also strongly promoted by the donor community, particularly the World Bank. A number of agreements were signed that enabled substantial portions of the revenue collected to be retained at the site of collection, which was intended to help to counter budget cuts and enable the facilities to satisfy local needs in drugs rather than contribute to the central treasury as was the case before the reforms. The desire and determination of the government to improve health care was clearly stated in its health strategy papers and the conditionality framework for the Heavily Indebted Poor Countries (HIPC) initiative, which noted that improved access and quality to health were an important component of the global strategy to fight poverty. This forms an important building block of the Interim Poverty Reduction Strategy Paper (IPRSP) (Republic of Cameroon 2003).

The rest of the chapter is organized as follows: a literature review is followed by an examination of the demand for health care and its implications for public expenditure decisions and choices, with a discussion of findings that link public spending on health care to health outcomes measures. The following section discusses the methodology used for the study and the data types; then the empirical results and findings are presented, and finally a summary and conclusions.

Literature Review

Studies on the Demand for Health Care

Although several factors influence demand for health care, prices and incomes are of particular interest to public financing decisions. Earlier studies that dealt with the issue of demand for medical care emphasized the effects of prices charged at the level of facilities on health care utilization. These early studies reported low and statistically insignificant price elasticity (e.g. Heller 1982; Akin et al. 1986). Heller (1982) studied the demand for medical care in Malaysia and revealed that the demand for care was highly inelastic to monetary price. In a study of the determinants of demand for medical care in the rural regions of Philippines, Akin et al. (1986) found little significant effect of prices on the volume and choice of adults demand for health care.

These results contrast sharply with those from most recent studies, which report high and statistically significant price elasticity (Gertler, Locay and Sanderson 1987; Gertler and Van der Gaag 1990; Nwabu and Wang 'Ombe 1994). The view that demand for health services in the developing countries is largely unaffected by changes in prices was strongly challenged in a study by Gertler and Van Der Gaag (1990). These authors concluded that the utilization of health services is in fact sensitive to changes in price and in income. This evidence suggests an overwhelming support for free provision or at least a subsidized cost of services for poorer household members.

The differences in these results are rather paradoxical. Gertler and Van der Gaag (1990) pointed out that these were related to errors in specification of the demand model, particularly the measurement of prices. In the literature, price is measured as being equal to the unit cost per hospital visit as reported by the consumer or as the standard fee charged by the providers. The established fee used in the literature (Gertler and Van der Gaag 1990) fails to incorporate time price or non-monetary price. Another possible cause of the paradoxical result is that of poor quality of data, since the information on travel time, income and prices is far from being accurate. It is obvious that findings based on these specifications may yield results that are inconsistent with the classical theory of demand. Previous studies cover only isolated part of the country, such as districts or regions, and failed to reflect even prices in the whole country (Litvack and Bodart 1993).

Income, like price proxied by per capita consumption, has a substantial effect on the demand for medical care. In many of the developing countries, concern that charging for medical care may limit access for some income groups has been used to justify free medical care (Hutchinson 1999). Other studies have found that it is not income nor price charged that matters. The poorest groups will increase consumption of health care if quality were to improve following an institution of fees in public facilities (Litvack and Bodart 1993). The various views are important in public expenditure policy decisions on health care.

The Link between Public Expenditures and Health Outcomes

The impact of public expenditure on health care is transmitted primarily through the flow of public resources to health programmes and to the actual delivery of services. The presence of large external effects on certain public health programmes is usually advanced as the basis on which the impact of public expenditure on health care is explained. This is because induced increases in public provision of health goods and services with substantial externalities will be passed on to the population in the form of improved health care. Public policy that reduces the level of expenditures on health care, particularly cost-effective programmes, may lead to deleterious consequences on health care provision. The main beneficiaries from cost-effective interventions are usually the poor, and there is no doubt that increases in public spending on such interventions will improve their health outcomes (Birdsall and James 1992).

The impact of public expenditure on health status depends on the link between public expenditure on health care and public delivery of health services (Ogbu and Gallagher 1992). Despite the lack of data on public spending on specific programmes, which has limited the direct examination of the issue, Musgrove (1996) concludes, after a study of the impact of public spending on health care on health status, that income is significant in explaining changes in health status measured in terms of child mortality but that public health spending fails to influence health care in any significant way. The negative finding by Musgrove could potentially be a reflection of differences in the efficacy of public spending across countries.

Rajkumar and Swaroop (2002) argue that public spending on unproductive activities cannot improve health outcomes, and many studies that have investigated this link use only cross-country data while ignoring country-specific situations such as corruption and administrative bottlenecks that render public spending on health ineffective. Filmer, Hammer and Pritchett (2000) argue that the negative link could be a result of a crowding out of private sector effort by public spending. Contrarily, Anand and Ravallion (1993), Hammer, Nabi and Cercone (1995), Bidani and Ravallion (1997), Zweifel and Breyer (1997) and Filmer and Pritchett (1999) have shown that public expenditures on health play an important role in improving health status provided such expenditures are directed to effective health services.

Hammer et al. (1995), using an econometric analysis of state-level panel data for Malaysia from 1986 to 1989, suggest that public health programmes such as immunization and safe water supply have significant effects on reducing infant and maternal mortality rates. Filmer and Pritchett (1999), in a study linking public health spending and health incomes, found a close relationship between public expenditure and health outcomes. These results emphasize the extent to which the distribution of public expenditures between the various levels of the health system can affect the efficiency of public expenditure in improving health outcomes. Essential health services such as preventive health as opposed to high-level curative care are said to benefit the poor disproportionately more (Hammer et al. 1995; Van de Walle 1995).

In spite of this, public expenditure in Cameroon and in most developing countries tends to be skewed to higher-order services that benefit mostly the more affluent urban based groups (Clements, Gupta and Tiongson 1998; Castro-Leal et al. 1999). The political process for allocating resources between primary and curative care is such that too little is allocated to primary health care, even when economic calculations show that primary health care should be the most beneficial of budgetary allocations. Also the right drugs are cost-effective solutions to many health problems provided they are available and accessible; yet most public health facilities in Africa continue to face drug shortages because of declining shares of recurrent spending on drug supply (Ogbu and Gallagher 1992; World Bank 1995) and waste (Ferroni and Kanbur 1991; World Bank 1995).

Methodology and Data Sources and Types

Methodology

The empirical specifications used for this analysis are based on the standard neo-classical utility-maximization model in which consumers allocate resources to obtain maximum satisfaction from a number of inputs/goods. The model postulates that the individual maximizes his welfare from the consumption of all other goods and maintenance of health status subject to a budget constraint and a health production, as follows:

$$\text{Maximize } U = U(X, HS) \quad (1)$$

with respect to X , H_1 , and H_2 subject to the budget constraint,

$$Y = X + P_1 H_1 + P_2 H_2$$

and the health production function

$$HS = HS(H_1, H_2, K)$$

where:

K is a level of knowledge, HS is health status, X is consumption of goods other than health, P_1 and P_2 are the prices of two health inputs, and Y is the total amount of resources at the disposal of the consumer.

The inputs into health status are considered in the model to consist of the amount of curative, preventive and other form of health stock given households resources available for all goods and services. These inputs can equally represent the different types of health care providers – government, private or traditional healers – each with their own time and money prices in the case of the demand for health care or access to the latter. Viewed as goods, the quantities consumed of each type would be expected to decrease with longer distance and higher costs, and to rise with better quality, increases in government subsidies to cost-effective programmes and higher incomes.

Demand Analysis on Health Care

The theoretical model naturally leads to an empirical specification of a demand for a health care model. Health care demand analysis seeks to examine consumer choice of whether to seek care or not and where to seek such care by identifying both individual and facility factors that influence such choices. These factors include prices that consumers pay to gain access to health services, household incomes, socio-economic and demographic characteristics of the individual; the individual's perception of the need for medical care, and the quality of the existing services as well as characteristics of the health service provider.

While the existence of a relationship between these factors and the demand for health care cannot be contested, their magnitudes needs to be quantified and are particularly important in the design of public policy in the health sector. In this chapter, it is hypothesized that besides price and incomes, travel cost is expected to be a powerful device since this represents additional costs in seeking health care. The quality variable has not been included in this analysis, but this by no means implies that quality is unimportant, nor is the decision to seek care unaffected by improvement in quality. However, this phenomenon is not directly related to the main argument of this study.

The Model for Demand for Health Care

This analysis is based on the standard behavioural model described in the introduction of this section (Gertler et al. 1987). The conditional utility function is given by:

$$U_j = \alpha_0 H_j + \alpha_1 C_j + \alpha_2 C_j^2 + \mu_j \quad (2)$$

where: H_j is the expected health status after receiving treatment from provider j , C_j is income net of total price incurred in seeking care, which include the amount paid to provider and transport costs ($C_j = Y - P_j$), and is a stochastic error term. This specification constrains the coefficients of alternative-specific variables to be constant across alternatives. following closely the requirements of conditional logit model developed by McFadden (1973).

Assuming that $H_0 = 0$ so that H_j is a function of individual and facility characteristics X and Z respectively, besides price, that is:

$$H_j = \alpha_{0j} + \alpha_{1j}X + \alpha_{2j}Z_j \quad (3)$$

Substituting equation (3) into (2) and ignoring $\alpha_0 H_0$ gives the conditional utility function as:

$$U_j = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 (Y - P_j) + \beta_4 (Y - P_j)^2 \quad (4)$$

The coefficients on the demographic variables vary by alternatives, but the coefficients on the economic variables are constant across alternatives. To estimate the demand function, we specify the stochastic distribution. The demand function of an alternative is the probability that the utility from the alternative is higher than the utility from any other alternative. The demand function takes the form of the

multinomial logit (MNL), although this form suffers from the assumption of the independence of irrelevant alternatives, which means that the stochastic portions of conditional utility function are uncorrelated among alternatives.

Provider Choice: Multinomial Logit Model

Once an individual decides to seek medical care rather than self-care, the individual's health-seeking behaviour is manifested as multiple responses to a condition (actual disease or perceived threat) in the following multinomial logit model, which is an extension of the linear logit model in relation to consumer theory. Suppose that the individual has $j + 1$ choice options and that utility derived from the choice j is:

$$U_{ij} = \alpha'X_{ij} + \beta'Z_i + \varepsilon_{ij} \quad (5)$$

We can define an underlying latent variable Y_{ij}^* to denote the level of utility for the i th individual making the j th choice. The observed variable Y_{ij} is defined as:

$$Y_{ij} = 1 \text{ if the } i\text{th individual makes the } j\text{th choice}$$

$$Y_{ij} = 0 \text{ otherwise}$$

Then,

$$U_{ij} = Y_{ij} = \alpha'X_{ij} + \beta'Z_i + \varepsilon_{ij} \quad (6)$$

where X_{ij} represents the observed attributes of the choice j perceived by individual i , Z_i the observed characteristics of individual i , ε_{ij} the residual that captures unobserved variations in tastes and in the attitudes of alternatives and possibly errors in the perception and optimization by the consumer.

The consumer makes the choice j , which maximizes his utility, given $j + 1$ utility. The statistical model is driven by the probability that choice j is made, which is:

$$\Pr ob(U_{ij} > U_{ik}) \text{ for all other } k \neq j$$

The choice of a distribution for the disturbances renders the model operational. Let Y be a random variable indicating the choice made. This choice corresponds to one value among 0, 1, and 2, ...J. McFadden (1973) had demonstrated that if and only if the $j + 1$ disturbances are independent and identically distributed (IID) with the type 1 extreme value distribution whose cumulative distribution function (CDF) is:

$$\Pr ob(\varepsilon_{ij} < \varepsilon) = \text{Exp}(-e^{-\varepsilon})$$

and whose probability density function (PDF) is $f(\varepsilon_i) = \exp(-\varepsilon_i - e^{-\varepsilon_i})$

Then,

$$\Pr ob(Y_i = j) = \frac{\text{Exp}(\alpha'X_{ij} + \beta'Z_i)}{\sum_{j=0}^J \text{Exp}(\alpha'X_{ij} + \beta'Z_i)} \quad (7)$$

$j = 0, 1, 2, \dots, J$.

The expression (7) gives us what Greene (1993) calls the mixed model or what Maddala (1983:44) terms the general model. Following this specification, utility depends on the attributes of the choice j , X_{ij} perceived by the i th individual and the observed characteristics of the i th individual, Z_i . The attributes of choice j , X_{ij} vary with individual choice, while the individual characteristics of Z_i are the same for all choices and vary only across individuals.

The attributes of choice j used in this study are the prices charged for services at health facilities and travel cost. We assume here that the individual knows the existing health care providers and the expected cost charged by the providers and the travel cost to the facilities. Access to these health care providers may be limited by the price charged for health care and the travel cost to the health facility.

In the model, the vector a gives the implicit prices for health care. This vector is normalized by setting the first element of a equal to 1. The number of elements in vector Z_i is the number of individual characteristics multiplied by $J-1$, where J is the number of health facilities. With the estimated parameters and a new individual with specified characteristics, the probability that the individual will choose one of the J health facilities considered can be predicted.

Let choice 0 be the self-care alternative and choice 1, 2, ..., J be the various provider alternatives. The self-care demand function or the probability of choosing self-care is:

$$\Pr ob [Y_i = 0] = \frac{1}{1 + \sum_{j=1}^J \exp(\alpha' X_{ij} + \beta' Z_i)} \quad (8)$$

and the demand for provider j is:

$$\Pr ob [Y_i = j] = \frac{\exp(\alpha' X_{ij} + \beta' Z_i)}{1 + \sum_{j=1}^J \exp(\alpha' X_{ij} + \beta' Z_i)} \quad (9)$$

The log likelihood function for this problem is simply:

$$\text{LnLi} = \sum_{j=0}^J D_{ij} \text{LnProb}(Y_i = j) \quad (10)$$

where $D_{ij} = 0$ dichotomous variable that takes on the value 1 if individual i chooses alternative j , that is, if $Y_i = j$

Health Outcomes and Expenditure Intervention

The next part of the analysis assesses how much of the improvement in health outcomes can be explained by changes in public expenditures and how much merely reflects growth in incomes. To carry out this assessment, we develop a time series on

the programme-level composition of health expenditures. Piecing together the various programme expenditures interventions can provide valuable insights. In this specification, income is a control variable (Anand and Ravallion 1993). The different programme expenditures generally include public goods and public provision of goods that are basically private. A determination of the direction and magnitudes of the effects of public health expenditure policies on health outcomes is essential and thus an important aspect in the prioritization of such expenditures.

Empirical Specification

The simple relationship linking health outcomes to public interventions is expressed as follows:

$$HS_t = f(\text{Income}_t, \text{PHS.PC}_t, \text{AcSaWa}_t, \text{DOC.PC}_t, \varepsilon_t) \quad (11)$$

where:

HS denotes health status measured with infant and maternal mortality rates; Income is GDP per capita (1990 constant CFAF) as proxy for income per capita; PHS.PC is Public Health Expenditure per capita; AcSaWa denotes access to safe water drinking water for public provision of goods with high external effects; DOC.PC is public provision of private goods, i.e. the number of doctors per capita that are publicly assigned; and ε is the stochastic disturbance term.

A double log transformation of equation (11) and expressing HS as a linear relation of the different interventions leads to the following estimable equation:

$$\ln HS_t = \alpha + \beta_1 \ln \text{income}_t + \beta_2 \ln \text{PHS.PC}_t + \beta_3 \ln \text{AcSaWa}_t + \beta_4 \ln \text{DOC.PC}_t + \varepsilon_t \quad (12)$$

Although econometric attempts have been made to measure the impact of health expenditures on health outcomes (Hammer, Nabi and Cercone 1995), it is quite a serious problem in trying to establish a relationship between public health expenditures and health outcomes. The reason is simply that such outcomes can be a function of many other factors other than government expenditures (Filmer and Pritchett 1999).

The estimation of these relations is done with the application of ordinary least squares on time series data for the period 1980–99 and will give the contributions of the explanatory variables to the changes in health status. The full results of the regressions of the logit and time series models are presented below.

Estimation Technique Used in the Analysis

The econometric technique used to estimate the size of the demand relationship involves limited dependent variables in which the dependent variable assumes discrete values. In this study, simple logistic regression is used initially to assess the factors affecting utilization of a given medical service or kind of care; the multinomial logit estimation model is then used as an extension to determine the probability of a person demanding a health service among various types of providers (Greene 1993; Maddala 1983). The multinomial model is easier to compute than the probit function.

For the estimation of policy interventions affecting health status, we apply ordinary least squares on time series figures collected from 1980 to 1999.

Data Sources and Limitations

Broadly, two sets of data will be used for the purpose of this study. The first set of survey data used for demand analysis in the health sector is drawn from the first Cameroon Household Survey, 1996, a multipurpose household survey conducted by the Department of Statistic and National Accounts of the Ministry of Economy and Finance. The 1996 household survey is a representative survey containing information on about 10,000 individuals and 1,500 households from the ten provinces of Cameroon. The survey was done in three months with a recall period of two weeks. Information on utilization of health services was obtained from household members who reported illness or injury during the two weeks prior to the interview.

The measure of morbidity was not done using any clinical diagnosis but rather with information obtained directly from respondents, which may be problematic. A second problem is that visits to health care units were not categorized (preventive as opposed to curative, inpatient vs outpatient visits).

We then examine a model based on time series data to assess the impact of public expenditures on outcomes relevant to the health sector. To do this, we construct time services data from 1980 to 1999 on GDP per capita, public expenditure on health care, infant and maternal mortality rates, proportion of population with access to safe water, and number of publicly employed doctor per capita. The immunization rate would have been a key variable, but this was found to be unstable even after taking first and second differences and hence was eliminated from the regression. The data sources for the explanatory or intervention variables include epidemiological data on Cameroon published by the United Nations Children Fund (UNICEF), UNDP Common Country Assessment 1998, the Ministry of Public Health, and the World Health Organization and from World Bank data. The Bank of Central African States (BEAC), the IMF Government Finance Statistics and the Department of Statistics of the Ministry of Economy and Finance and the Department of Budget were useful sources of public expenditure and GDP figures.

Empirical Results and Discussion

Discussion of Descriptive Results

This section examines the profiles of the use of health care services across consumption expenditure groups in Cameroon in 1996. According to the survey, as shown by Table 13.2, 50.9 per cent of all persons reporting ill during the last two weeks preceding the survey consulted physicians, followed by midwives and nurses (18.2 per cent), pharmacists (3.2) and self-care (16.9). Self-care embodies traditional healers, drug hawkers and other informal sources.

Table 13.2: Treatment of Illness by Expenditure Group, Cameroon, 1996 (%)

Last Week Illness Treated by	Poor	Middle	Rich	Average
Physician	26.2	50.1	65.4	50.9
Medical Assistant	19.3	11.1	5.5	10.7
Midwife/Nurse	19.3	21.0	15.1	18.2
Pharmacist	3.6	1.4	4.5	3.2
Church	0.3	0.0	0.0	0.1
Traditional Healer	25.0	8.2	5.5	10.9
Drug Hawker	5.7	8.0	3.7	5.6
Other	0.6	0.4	0.3	0.4
All Cameroon	23.1	35.4	41.4	100.0

Source: Cameroon Household Survey 1996, author's calculations.

Most of the poor received medical attention from informal sources (31.3 per cent) compared with only 9.5 per cent for the high-income households. Visits attended by nurses and midwives on the contrary were higher for the poor (19.3 per cent) and for the middle households (21 per cent) than for the rich (15.1 per cent). The survey data also suggest that 24.26 per cent of the visits were made in public facilities while 32.58 per cent were made in private facilities, suggesting the declining role of the public sector in health care provision (Table 13.3).

Table 13.3: Illness Episodes and Source of Treatment (%)

Region	%	% Ill Seeking Treatment	Source of Treatment	
	Reporting Ill		Government	Private
All Cameroon	24.3	58.70	24.26	32.58
Urban	28.5	63.25	25.57	36.12
Rural	17.9	47.89	21.15	24.15
Yaoundé	29.3	62.86	27.60	33.90
Douala	29.6	63.72	21.99	35.73
Other Towns	26.6	63.72	27.44	35.73
Forest	19.7	36.80	16.32	20.14
High Plateaux	20.6	61.56	22.45	32.99
Savannah	24.3	42.38	27.81	14.57

Source: Cameroon household survey 1996, author's calculations.

Evidence from the survey also shows that the middle-income households benefit most from public services. The poor are often bypassed while the rich seek alternative services in the private sector (Table 13.4). This result has important implication for public policy on health care and thus suggests that if utilizations were to be raised for all groups including the poor, more should be spent on services that are most beneficial to the poor, such as cost-effective services and those provided by nurses and midwives.

Table 13.4: Use of Public Facilities by Expenditure Group, 1996 (%)

Visit Type	Poor	Middle	Rich	Average
Illness	33.65	47.56	37.12	39.97
Medical Check-up	66.67	42.10	37.50	42.10
Prenatal Consultation	66.67	66.67	68.75	67.74
PMI Visit	100.0	75.00	62.50	75.00
Vaccination	20.0	100.0	33.33	57.14
Others	16.67	57.14	46.15	37.50
Total	34.91	48.64	38.40	41.23

Source: Cameroon household survey 1996, author's calculations.

Household Expenditures on Health Care

The amount of private expenditures on health care is an important determinant of the health outcomes of households. Table 13A.4 shows selected public expenditure interventions on health programmes. The last column indicates that real per capita government spending on health care in CFA francs is far less than private per capita expenditure on health care calculated from the 1996 household survey. The evidence from the survey suggests that at the national level, an individual devoted an average of 13,000 CFAF for health care per year. The poor spent only 5,600 CFAF on average. At regional level, households in Douala and Yaoundé devoted 27,000 CFAF and 21,000 CFAF on average to health care, respectively while the poor in the Forest Region allocated only 7,600 CFAF for health care. The above analysis clearly indicates that the use of health care services was an increasing function of per capita income and also shows great regional disparities in such expenditures. Additionally it demonstrates the importance of household contribution to the financing of health services in Cameroon.

Analysis of Regression Results

Factors Affecting the Demand for Health Care

The estimated model was well fitted. The chi-square statistics were sufficiently large to reject the null hypothesis that the estimated parameters are equal to zero. Table 13A.1 shows results from the estimation of the simple logit model. The estimated coefficients of the parameters should lie between 0 and 1 to be consistent with a stable utility maximization. The estimates show that prolonged schooling with an estimated coefficient of 0.192 is an important factor that affects the probability of seeking modern care and is significantly different from zero. The estimated coefficient of 0.070 shown in the same appendix indicates that the utilization of public facilities is likely to rise with increases in the number of years spent in school. Persons seeking care from private and public facilities tend to be the more educated than those that seek traditional care.

Gender and household size are not significant determinants of the demand for health care except in public facilities where females were more likely to seek services than males, explaining the progress made so far in increasing access to essential care such as pre- and post-maternity services. Per capita consumption is a strong, positive and significant factor that determines the utilization of modern curative care with an estimated coefficient of $1.72E-06$. However, this coefficient is negative in public facilities ($-9.83E-07$). The consumption coefficient in the multinomial estimation is positive for both public and private facilities and statistically significant for the latter. This may be interpreted as an indication that relative to self-care, as incomes increase, people become wealthier and tend to seek more care at private facilities where they can afford to pay for higher quality but expensive care (Table 13A.2). The overall results suggest that utilization of health services is likely to rise with an increase in incomes.

The effect of user fee or price charged at a facility was not statistically significant in any of the regressions. With negative coefficients for both public and private providers, the results suggest that patients were more likely to decrease their utilizations of both public and private modern health care services when prices rise in these facilities and to seek alternative care. Travel cost, with an estimated coefficient of -0.465 for modern care and -0.279 for public facilities, appears to contribute to a reduction in use rates and significantly affect the use of public care. This result thus indicates that travel cost is a major obstacle to health care utilization. The negative estimated coefficients of travel costs in the multinomial model in Table 13A.2 indicates that patients who complained of travel cost as an obstacle to seeking public and private care were more likely to visit traditional healers for their health needs. This is probably due to the nearness of these providers to the population, especially in rural areas where the majority of traditional healers operate.

Health Outcomes and Public Expenditure Interventions

The estimated model shown in Table 13A.3 was also well fitted with errors having no memory so that the data are admissible. The series is generated from a white noise process and is stationary. A principal finding of this analysis is that controlling for income, variations in cost-effective programmes such as access to safe water are likely to reduce infant mortality significantly at the 5 per cent level of significance but not maternal mortality. The estimates also suggest that the number of public doctors per capita does not contribute to a reduction in infant mortality, with an elasticity of 0.164 and no significant difference from zero. Contrarily, with an elasticity of -0.431 , doctors per capita seems to contribute to a reduction in maternal mortality but again is not significant because of its small t-value of 1.403 .

The results also suggest that with estimated elasticities of -0.727 and -0.908 , respectively, for infant and maternal mortality, average income is significantly different from zero for the two regressions. This suggests that income has a strong and robust effect on health status. Income is also an important determinant of the demand for private medical care that does affect health status significantly. Another finding of

the regression is that public spending per capita on health care is not a significant variable in explaining the improvement in health status. This result contrasts with findings that public expenditure on health care has a significant effect on health outcomes (Anand and Kanbur 1993; Bidani and Ravallion 1997), but supports findings by Musgrove (1996) that public spending on health has little or no significant effect on health outcomes. The overall results in Table 13A.3 thus suggest that public provision may substitute for private doctors with no net beneficial impact on health status. This study's findings conclude that if the government were seeking to improve health status, it should invest in cost-effective services because of a significantly less elastic private supply response.

Summary and Conclusion

Since evidence appears to suggest that prices charged at health facilities do not significantly affect the demand for health care in Cameroon, it may be necessary to increase utilization of health services by providing free care in the absence of budgetary constraints. This may be largely unrealistic given that government resources are not unlimited and some health services are basically private goods that can be provided more efficiently by the market. Also as travel cost affects the use of health care, building new facilities closer to the populations and rehabilitating others may extend services to areas not served before and thus limit the increase in the costs of medical care. Although the analysis shows that price paid at health facilities does not significantly affect the demand for health services, one cannot make any strong conclusion on the likely effect of price increases on the demand for health services since the coefficient is estimated from consultation costs, which are uniformly low across various facilities. If the effect of the overall costs were to be estimated, it is likely that such effect would affect the demand for health services following closely the neo-classical theory of demand.

The analysis also suggests that income is a significant factor of the utilization of medical care. A useful implication of this result is that charging better-off patients at public facilities may help free up scarce resources for reallocation to primary and preventive care that tend to benefit the poor. Reducing other costs such as time and travel costs can help mitigate the impact of charging for health services. The study has also shown that public expenditure intervention on cost-effective services such as safe water results in better health outcomes, and consequently public subventions should only be directed to these services. More subsidies should also be directed to facilities in rural and suburban areas where poor and vulnerable households are likely to be concentrated.

Redirecting Public Expenditure to and within the Health Sector

Public expenditure restructuring in favour of health care is considered as a means through which additional resources can be mobilized for the health sector. Public expenditure restructuring needs to redirect spending from general administration, military and internal security, debt servicing, untargeted transfers and loss-making

public enterprises and other unproductive expenditure such as prestige projects to the social sector in general. Within the health sector, spending should be increased for cost-effective services and reduced for curative care. Waste and inefficiency in resource use should be avoided and priorities properly set out. A reduction in the high transaction costs often associated with the execution of public budgets and wastage are important sources of additional resources that can be mobilized for the health sector.

Note

1 Traditional healers are the default group.

References

- Akin, J.S., C. Griffin, D.K. Guilkey and B.M. Popkin, 1986, 'Demand for Primary Health Care in the Bicol Region of the Philippines', *Economic Development and Cultural Change*, Vol. 34, pp. 755–82.
- Amin, A.A., 1995, 'The Problem of Decreasing Income and Increasing Cost of Health Care in Cameroon', *Cahier d'Ocisca*, No. 23, Yaoundé.
- Anand, Sudhir and Martin Ravallion, 1993, 'Human Development in Poor Countries: On the Role of Private Incomes and Public Services', *Journal of Economic Perspectives*, Vol. 7, No. 1, pp. 133–50.
- Bidani, B. and M. Ravallion, 1997, 'Decomposing Social Indicators using Distributional Data', *Journal of Econometrics*, Vol. 77, pp. 125–39.
- Birdsall, N. and E. James, 1992, 'Health, Government and the Poor: The Case for Private Sector', *World Paper Series*, No. 938, pp. 1–24.
- Castro-Leal, F., J. Dayton, L. Demery and K. Mehra, 1999, 'Public Social Spending in Africa: Do the Poor Benefit?', *World Bank Research Observer*, Vol. 14, No. 1, pp. 49–72.
- Clements, B., S. Gupta and E. Tiongson, 1998, 'Public Spending on Human Development', *Finance and Development*, Vol. 35, No. 3, pp. 10–13.
- Ferroni, M. and R. Kanbur, 1991, *Poverty Conscious Restructuring of Public Expenditures: Economic Reform in Sub-Saharan Africa. Social Dimensions of Adjustment in Sub-Saharan Africa*, Working Paper 9, Washington, DC: World Bank.
- Filmer, D. and L. Pritchett, 1999, 'The Impact of Public Spending on Health: Does Money Matter?', *Social Science and Medicine*, Vol. 49, No. 1, pp. 1309–23.
- Filmer, D., J.S. Hammer and L.H. Pritchett, 2000, 'Weak Link in the Chain: A Diagnosis of Health Policy in Poor Countries', *World Bank Research Observer*, Vol. 15, No. 2, pp. 199–225.
- Gertler, P. and J. Van de Gaag, 1990, *The Willingness to Pay for Medical Care: Evidence from Two Developing Countries*, Baltimore: Johns Hopkins University Press.
- Gertler, P., L. Locay and W. Sanderson, 1987, 'Are User Fees Regressive?: Welfare Health Care in Peru', *Journal of Econometrics*, Vol. 36, pp. 67–88.
- Greene, William, 1993, *Econometric Analysis*, New York: Macmillan.
- Hammer, J.S., I. Nabi and A. Cercone, 1995, 'Distributional Effects of Social Expenditures in Malaysia, 1970–89'. In: D. Van de Walle and K. Nead, eds, *Public Spending and the Poor:*

- Theory and Evidence*, Washington, DC and Baltimore: World Bank and Johns Hopkins University Press.
- Heller, Peter, 1982, 'A Model of Demand for Medical and Health Services in Peninsular Malaysia', *Social Sciences and Medicine*, Vol. 16, pp. 267–84.
- Litvack, I.J. and C. Bodart, 1993, 'User Fees plus Quality Equals Improved Access to Health Care: Results of a Field Experiment in Cameroon', *Social Science and Medicine*, Vol. 37, No. 3, pp. 369–83.
- Maddala, G.S., 1983, *Limited Dependent and Qualitative Variables in Econometrics*, Econometric Society Monographs, Cambridge: Cambridge University Press.
- McFadden, Daniel, 1973, 'Conditional Logit Analysis of Qualitative Choice Behaviour'. In: P. Zarembka, ed., *Frontiers in Econometrics*, New York: Academic Press.
- Musgrove, P., 1996, *Public and Private Rates in Health: Theory and Financing Patterns*, World Bank Discussion Paper No. 339, Washington, DC: World Bank.
- Ntangsi, J., 1998, *An Analysis of Health Sector Expenditure in Cameroon using a National Health Account Framework*, Cambridge, MA: Harvard University Press.
- Nwabu, G.M. and J. Wang 'Ombe, 1994, *Health Services Pricing Reforms in Kenya; 1989–1993*, Washington, DC: International Health Policy Program, World Bank.
- Ogbu, O. and M. Gallagher, 1992, 'Public Expenditures and Health Care in Africa', *Social Science and Medicine*, Vol. 34, No. 6, pp. 615–24.
- Rajkumar, A.S. and V. Swaroop, 2002, *Public Spending and Outcomes: Does Governance Matter?*, Policy Research Working Paper 2840, Washington, DC: World Bank.
- République du Cameroun, 1992, *Déclaration de Politique Sectorielle de Santé*, Yaoundé.
- République du Cameroun, MINSANTE, 2001, *Stratégie Sectorielle de Santé*, Yaoundé.
- UNICEF, 1989, *The State of the World's Children*, New York: Oxford University Press.
- UNICEF, 1997, *Cameroon: Analyse de la situation des Enfants et Femmes en République du Cameroun*, New York: Oxford University Press.
- Van de Walle, D., 1995, *Public Spending and the Poor: What We Know, What We Need to Know*, Research Working Paper 1476, Washington, DC: World Bank.
- WHO, 1986, *Maternal Mortality Rates: A Tabulation of Available Information*, Geneva: WHO.
- WHO/UNICEF, 1996, *Revised 1990 Estimates of Maternal Mortality: A New Approach by WHO and UNICEF*, Geneva: WHO/UNICEF.
- World Bank, 1995, *Better Health in Africa: Experience and Lessons Learned: Development in Practice*, Washington, DC: World Bank.
- Zweifel, P. and F. Breyer, 1997, *Health Economics*, Oxford: Oxford University Press.

Appendices

Table 13A.1: Logit Estimation of the Use of Formal Health Care Services, 1996

Independent Variable	Modern Curative Care		Public Facility Care	
	Coefficient	Z	Coefficient	Z
Constant	2.263 (0.433)	5.226	0.418 (0.246)	1.701
Age	-0.017 (0.007)	-2.258**	-0.0021 (0.0051)	-0.422
Male	-0.186 (0.233)	0.797	-0.286 (0.139)	-2.060**
Education	0.192 (0.080)	2.405**	0.070 (0.040)	1.751*
Cost (price)	-9.883-06 (0.00002)	-0.546	-1.12E -06 (0.000012)	-0.094
Consumption per Capita	1.72E-06 (7.78E-07)	2.209**	-9.83E-07 (2.97E -07)	-3.307***
Travel Cost	-0.465 (0.240)	-1.935*	-0.279 (0.155)	-1.800*
Household Size	-0.020 (0.029)	-0.699	-0.052 (0.018)	-2.893***
Observations	912		913	
Log Likelihood	-269.670		-606.714	
P<0.1*P<0.05** P<0.01***			LR chi ² (8) = 350.48	
R chi ² (7) = 34.94			(Prob.) chi ² = 0.0000	
Prob,chi ² = 0.0000			(Standard errors are in parenthesis)	

Source: author's calculations.

Table 13A.2: Multinomial Logit Estimation of Choice of Health Care Provider*

Independent Variable	Public		Private	
	Coefficient	Z	Coefficient	Z
Constant	1.943 (0.463)	4.200	1.320 (0.458)	2.881
Age	-0.015 (0.008)	-1.924*	-0.016 (0.0079)	-2.049**
Male	-0.351 (0.250)	-1.404	-0.083 (0.247)	-0.336
Education	0.230 (0.085)	2.695***	0.176 (0.085)	2.075**
Price Charged	-8.68E-06 (0.00002)	-0.432	-5.88E-06 (0.000019)	-0.304
Per Capita Cons.	1.01E-06 1.228 8.24E-07		2.22E-06 (8.13E-07)	2.731***
Travel Cost	-0.646 (0.259)	-2.490**	-0.495 (0.256)	-1.936
Household Size	-0.049 (0.031)	-1.582	0.0006 (0.300)	0.019
Observations	893		893	
Log Likelihood	-806.303		-806.303	

Note: * traditional healers are the default group. LR chi² (14) = 62.38; Prob.>chi² = 0.0000.

Source: author's calculations.

Table 13A.3: Determinants of Infant and Maternal Mortality, Cameroon, 1980–99

Explanatory Variables	IMR		MMR	
	Coefficient	t	Coefficient	T
Constant	-3.263	-0.588	21.477	3.605
Real per Capita Income	-0.727	2.731***	-0.908	-3.175***
Real per Capita PHS	-0.131	-1.391	-0.093	-0.925
Safe Water	-0.591	-2.761**	0.193	0.840
Public Doctor per Capita	0.164	0.574	-0.431	-1.403
R ²	0.810		0.861	
D.W. Statistic	0.987		1.833	

All variables are in natural logarithms:

* = significant at 10%; ** = significant at 5%; *** = significant at 1%/

Source: author's calculations.

Table 13A.4: Health Outcomes and Selected Interventions, 1980–99

Year	IMR	MMR	Real GDP per Capita 100 = 1990)	DPT 3	ASAWA (%)	Pop. Per Doctor (CFA F)	Real per Cap. PHS
1980	106	303	285 000	5	26	15 224	2170
1981	97	303	316 000	5	26	14 990	2310
1982	95	303	331 000	2	26	14 616	2300
1983	94	300	346 000	5	30	14 003	2692
1984	92	300	356 000	5	30	13 411	2698
1985	91	300	367 000	34	31	12 884	2921
1986	88	300	382 000	35	33	12 740	2952
1987	86	300	346 000	45	33	11 816	2597
1988	74	450	311 000	35	34	11 971	1899
1989	70	420	283 000	19	34	12 212	2013
1990	68	420	280 000	50	40	11 421	2064
1991	65	420	262 000	34	40	11 775	2060
1992	63	430	259 000	20	41	14 675	2232
1993	62	430	249 000	33	41	15 108	1879
1994	58	547	235 000	31	41	12799	1482
1995	60	547	239 000	48	44.2	12020	804
1996	63	550	244 000	46	44.2	11490	775
1997	64	550	246 000	44	44.2	11190	1017
1998	77	430	258 000	43	50	10938	1148
1999	77	430	255.000	48	50	10.675	1152

Source: World Bank; ADI 2002; MOPH; United Nations Child Survival Unit 1994; NIS/DSTAT, UNDP, Cameroon, 1998; DHS 1991 and 1998.

Table 13A.5: Health Outcomes and Real Per Capita GDP, Cameroon, 1980–99

Year	Infant Mortality Rate	Maternal Mortality Rate	Real Per Capita GDP (100 = 1990)
1980	106	303	285000
1981	97	303	316000
1982	95	303	331000
1983	94	300	346000
1984	92	300	356000
1985	91	300	367000
1986	88	300	382000
1987	86	300	346000
1988	74	450	311000
1989	70	420	283000
1990	68	420	280000
1991	65	420	262000
1992	63	430	259000
1993	62	430	249000
1994	58	547	235000
1995	60	547	239000
1996	63	550	244000
1997	64	550	246000
1998	74	430	258000
1999	74	430	255000

Source: World Bank; ADI, 1994/95 & 1996; World Tables 1995; WDI, 1998, 1999; MOPH; WHO, 1994 United Nations Child Survival Unit; DSCN/DSTAT, ECAM 96; UNDP, Cameroon, 1998; DHS 1991 & 1998; author's own calculations.

Financial Sector Reforms in Cameroon

**Regina Tawah, Rebecca Marfawtem N. Amin
and Vinatius Bweh Ewane**

Introduction and Background

Cameroon's economy performed well during the period 1961–1985, with agriculture supporting the economy during the period 1961–77 and petroleum taking the lead for the period 1978–85. The economy was considered well managed during this period, and the country enjoyed a steady growth rate with one of the highest per capita incomes in Sub-Saharan Africa. The external shocks of the 1970s and early 1980s did not appear to affect the continuing growth of the economy, which was as high as 12 per cent per year for the period 1977/78–1980/81, in spite of a population growth rate of 3.1 per cent (Amin 2002).

Agriculture remains the dominant sector, in spite of petroleum resources. It accounts for 44 per cent of the GDP, employs 70 per cent of the active population and provides 85 per cent of exports by value. Agriculture is therefore considered a national priority as a primary sector activity and includes livestock, hunting, fishing, forestry and logging as well as crop production activities. As Amin (2002) notes, in a developing economy like Cameroon, agriculture is considered the most important sector, providing and generating crucial interlinkages with the growth of other sectors. This gives the sector a strategic character and importance. Yet despite this strategic nature agriculture is dominated by smallholder production systems consisting mainly of small-scale farmers using rudimentary equipment and techniques. As a consequence, the sector suffers from low production and productivity. Modernizing the sector to achieve greater production and productivity is therefore imperative. It should however be noted that a modern sector made up of large plantations exists, these being owned and managed by both public and private interests.

The secondary sector is relatively diversified. It is made up of mainly extractive industries (including mining and quarrying), transformation of raw materials, food and beverage industries, aluminium, textiles and leather industries. Other production activities in the sector include wood and chemical products, electricity, gas and oil

refineries, public works and construction. There are about thirty large companies that dominate the sector, some modern-size enterprises and a significant number of small enterprises employing fewer than ten persons. Despite its economic potentials, the industrial sector is in a general state of decline, due mainly to the high cost of inputs, ageing production plants and obsolete technology, with serious implications for production and competitiveness. The sector therefore requires serious revamping, with requires substantial instruments and a specialized financing policy.

The tertiary sector in Cameroon covers a broad range of activities including trade, hotels and restaurants, tourism, transport and communication, financial activities, property and public administration. As part of the tertiary sector, the public sector has been involved in the production of tangible goods including consumer goods. On a general note, the public sector is considered inefficient and has been faulted for hindering the proper performance of the economy. A major characteristic of economic development is the shift from the predominance of agricultural activities to manufacturing, industry and the expansion of the service sector.

The primary, secondary and tertiary sectors of the Cameroon economy were seriously affected by the economic crises of the mid-1980s. The reform of the financial sector featured as one of the core aspects of the structural adjustment programme (SAP) undertaken in most African countries as supported by the international development institutions and necessitated by generalized economic crisis experienced by the continent in the 1980s. In Cameroon in particular, GDP, which had been growing at a steady rate for the preceding two decades, took a downturn in 1986, reaching a low of 7 per cent in 1987/88 and 5 per cent in 1988/89. Expectedly, per capita income and private consumption per capita followed suit with a record fall of 24 and 15 per cent, respectively. Various external factors contributed to the deteriorating performance of the economy. Among these were declining export prices, reduced revenue from petroleum, an increase in foreign debt service and overvalued exchange rates. Along with internal factors the external shocks of the 1970s and the early 1980s to a large extent exposed some long-standing structural and institutional weaknesses in the domestic economy, including the financial sector.

This sector had been financially repressed, with the government heavily involved as owner, client and regulator but with inadequate controls and supervision. It was fraught with mismanagement and distorted policies. In the midst of the economic crisis the banks recorded soaring default rates in loan repayments and non-performing loans, with a consequent increasing loss of confidence in the banks. Reforms in the financial sector therefore broadly addressed problems of financial repression, bank insolvency and deficiencies in the financial infrastructure. Cameroon agreed to a SAP in 1988. A reformed financial sector was expected to perform the key functions of improving the payments mechanism, and intermediating between savers and investors, both inevitable processes in restoring the country to the path of economic growth.

The reforms appear to have resulted in a financial sector in Cameroon characterized largely by short-term credits catering mainly to the needs of the services sector, excess bank liquidity and stringent credit rationing, among others. This is

in spite of the needs for longer-term investment financing. The question that arises is to what extent the renewed financial sector is performing the role of a growth engine. In particular, has the structure of the clientele tilted in favour of the private sector compared to the pre-reform period? What specific groups have benefited from the reforms? This chapter presents an overview of the changes in the financial sector in Cameroon, highlighting various reforms and their effectiveness in restoring growth. A portion of it will be devoted to the changes in the semiformal and informal financial sectors.

The chapter is based on the work done by the authors individually and collectively using primary and secondary data sources. The primary information was collected by fieldwork. The secondary data were from both official and non-official sources. This study thus examines the various changes that have taken place in Cameroon's financial sector and the various institutions in the decentralized financial system and the rest of the sector.

Overview of Theoretical Issues

The Nature and Functions of the Financial System

The financial system in any economy has a pivotal role in the economic growth and development of a country. A healthy financial sector benefits capital accumulation, productivity and ultimately economic growth. This it does through effecting a number of functions. The financial system:

- i) Provides and administers the payment mechanism;
- ii) Facilitates financial intermediation between savers and investors, by providing channels for savings mobilization from various sources and directing them to investors;
- iii) In the process of financial intermediation, the financial sector effects transfer and distribution of risks and information through financial markets and financial institutions; and
- iv) Provides policy instruments for stabilizing economic activity.

The Financial Sector Provides a Payments Mechanism

By providing money the financial sector reduces the high costs and inefficiencies that are associated with barter transactions. Exchanges in a barter economy require that the wants of the buyer and the seller coincide. History tells us that attempts to mitigate costs implicit in trade by barter led societies to develop commodity money whereby universally accepted and durable commodities arose such as gold, silver and cowries, among others. Commodity money reduced transaction costs to some extent but trade across space and time still was problematic. Gold and silver faced fluctuations in prices in addition and reduced their reliability as a unit of account. The evolution from commodity money to fiat money provided a solution to the problems associated with barter trade. Fiat money is legal tender and debt

issued by central banks, and it is backed by confidence in the issuing central bank. The financial sector thus provides a medium of exchange through the issue of money, which is also a store of value and at the same time serves as a unit of account.

The Financial Sector Facilitates Intermediation between Savers and Investors

The financial sector facilitates and encourages saving and investment by providing effective and efficient means of transferring financial claims between savers and investors. This role is of great importance given that the market for financial claims involves exchanging merely for promises that will be fulfilled in the future. The economy at any one time has surplus units and deficit units. The former have excess financial resources they want to keep for the future while the latter need additional resources to enable them to meet current needs. An individual wishing to save has a choice to identify another individual who is in deficit and hence needs to borrow or otherwise seek alternative ways of safekeeping. It will then rest on him to assess whoever he finds to determine whether he will be paid back his money in full when he wants it. This is a costly and risky process, which ordinarily a saver may not want to engage in. The potential saver may resort to storing his money himself, which may not be safe, or acquiring non-financial assets that are safer to keep. This means that otherwise investible funds become limited. On the other hand, the potential borrower who does not identify someone ready to lend may resort to self-financing, which may be insufficient to cover his intended projects. Consequently, the capacity to engage in more substantial investments with higher earning capacity is limited, and so ultimately is the ability to earn higher incomes.

The costs and inconvenience of direct finance underscores the role of financial intermediaries between savers and investors or lenders and borrowers. Financial intermediaries accept funds from surplus units and use the funds to make loans to those who wish to gain current use of additional funds. In effect, the financial intermediary reduces the transaction costs of direct finance. It transfers and distributes risks efficiently since it has the ability to collect necessary information on both parties, to process the information and to disseminate it. It transforms terms to match the needs of savers and investors/borrowers by making longer-term loans even though depositors may wish to withdraw from their accounts within shorter-term periods. The financial intermediary also matches quantity of funds by collecting from both small and large savers and making loans of different sizes to deficit units.

Financial Sector Reforms and Economic Growth

The theoretical framework provided by McKinnon (1973) and Shaw (1973) presents an intellectual basis for analysing the financial sector. They hold that the common occurrence of financial repression in less developed countries relatively reduces the real rate of growth as well as the real size of the financial system. Financial liberalization, which entails raising real deposit rates of interest towards free market levels, would lead to increased savings and ultimately a higher growth rate via greater investments.

According to Odedokun (1996), the McKinnon–Shaw framework is based on the presumption of a positive causal relationship between finance and development. Odedokun provides an alternative framework for analysis, which is based on a one-sector aggregate production function incorporating financial development as one of a number of inputs. He however comes to recognize that there are external effects of finance on the real sectors and that the financial sector has some effect on the productivity of factors. Specifically, conclusions from his study of seventy-one countries from around the world include (i) that financial intermediation promotes economic growth, (ii) that it plays as an important a role as other factors such as export growth, capital formation and superior labour force growth, and (iii) that the growth-promoting effects of financial intermediation are more pronounced in low-income than in high-income developing countries. This came to add to the body of evidence consistent with the McKinnon–Shaw conclusion. Empirical evidence on various less developed countries between 1974 and 1980 showed that financial liberalization led to increased saving, followed by enhanced allocative efficiency of investment and hence an increase in the economic growth rate.

Intervention in the financial sector that stalls changes in interest rates and other financial prices in response to market change ultimately slows down the growth and development process. Before the reform of financial sector in Cameroon, as in many developing countries, there were serious problems in connection with excessive involvement of the government. Interest rates were administratively set by the government, which at the same time was a large borrower. To compound the problems that arose, the government failed to provide adequate regulation and supervision. An oligopolistic structure in which a few commercial banks dominated limited competition in the financial sector in Cameroon. It was an appropriate stage discouraging savings along with consequent effects on investment.

The financial system in Cameroon thus was in urgent need of reform that would remove the controls on interest rates to make real rates positive, promote competition and provide the necessary regulation and supervision that would deepen finance. Financial deepening is the process whereby financial assets grow faster than income, indicating the ability of the financial sector to provide loans for investment purposes. A financial system that grows in real size also gains in its capacity for intermediation. Overall it enhances the role of the financial sector in a country's economic growth and development.

Financial Sector Reforms in Cameroon

Financial Sector before the Reforms

In the 1960s and 1970s, Cameroon's economy grew at sustained high rates. Between 1967 and 1978, for instance, the country recorded a growth rate of above 5 per cent for GDP and national income. The government was engaged in promoting priority sectors and hence intervened directly to provide various incentives comprising among other things of prices controls with interest rate ceilings. Agriculture benefited

but it is noteworthy that the national and economic policy of the day favoured large-scale farmers over small farmers who made up a majority of producers in the sector. Small farmers had little access to and control over land, a major resource in their activity. They were virtually excluded from the formal credit market for lack of collateral since land was required by lenders. In addition, having been shown that uncertain tenure was a disincentive to taking risks, it follows that small farmers limited their risk-taking even to their own detriment. To add to this, the farmers were faced with a monopsony, the marketing board at the point of sale. In the manufacturing sector there was a similar situation. Industrial policy in the 1960s and 1970s favoured skill- and capital-intensive industries, hence foreign producers to the exclusion of domestic small industrialists. Modern manufacturing in Cameroon by 1976 was 77 per cent foreign-owned. When attention was turned to promoting domestic industry, the government itself took up a significant part of the interests and hence the smaller domestic manufacturers virtually lost their place in modern manufacturing. Large-scale public and parastatal firms filled the vacuum, thriving on the subsidies provided by government, including interest rate subsidies. The private sector in Cameroon has struggled for survival from many fronts such as increasing financing, obtaining capital, acquiring skills, etc. The reform of the financial sector alone would not have fully addressed these issues. An overhaul of policies in other areas was also timely.

The Formal Financial Sector in Cameroon

The financial sector in Cameroon then and now consists of a variety of interconnected formal, semiformal and informal financial institutions. The formal/modern sub-sector consists mainly of commercial banks but also development banks, postal savings institutions, a housing finance institution, insurance companies and a pension fund among others. The Bank of Central African States (BEAC), a regional central bank, is at the apex of the formal financial system and is charged with control of money supply and supervision of the financial system. BEAC replaced the 1960-created Banque Centrale des Etats de l'Afrique equatoriale et du Cameroun (BCEAEC) following an agreement signed on 22 November 1972 by five founding member countries, namely: Cameroon, Central African Republic, Chad, Congo and Gabon. The second convention was signed between the five African countries and France on 23 November 1972. These two conventions were completed by the membership of Equatorial Guinea on 1 January 1985. BEAC started effective operations on 2 April 1973 on the basis of commercial and banking laws, administered at member state level by a board of directors that was chaired by each state for a year in turn.

The Ministers of Finance and the Economy of the member states constituted a Monetary Committee. Another committee included France and was known as the Joint Monetary Committee. These two committees ensure cooperation among the signatories of the 1972 agreement. At national level the Minister of Finance was chair of the National Monetary Committee, which was charged partly with fixing

discount ceilings granted to banks based on the committee's assessment of economic and financial conditions in the country. Within this set-up, BEAC was expected to conduct monetary policy and carry out foreign exchange transactions.

The commercial banking system has been and still is the most prominent component of the formal financial system even though characterized by a relatively small number of commercial banks. From about seven banks in the mid-1970s, the number grew to ten just at the threshold of the economic crises in the mid-1980s. It is noteworthy that except for Cameroon Bank, all the others were foreign-owned. The development banks at the time were the National Development Bank (BCD), the Fund for Assistance to Small and Medium-scale Enterprises (FOGAPE) and the National Fund for Rural Development (FONADER). Other elements of the formal financial system include an investment bank, the Société Nationale d'Investissement (SNI), a housing bank, Credit Foncier du Cameroun (CFC), thirteen insurance companies, one government-owned reinsurance company, and a social insurance fund, the Caisse Nationale de Prevoyance Sociale (CNPS).

Before the crisis, the commercial banking system included a small number of foreign banks, which, as of mid-1980, had a network of 150 bank branches located mostly in the cities and in a few suburban towns. The biggest four were Banque Internationale pour le Commerce et l'industrie du Cameroun (BICIC), Société Camerounaise de Banque (SCB), Société Générale de banques au Cameroun (SGBC) and Banque Internationale de l'Afrique Occidentale au Cameroun (BIAOC). Together these accounted for 76 per cent of the total assets of the banking system, mobilized 63 per cent of the deposits and were responsible for 75 per cent of loans disbursed. As of 1986, the interests of nationals in the commercial banks amounted to about 45 per cent compared to 55 per cent of foreign interests. Needless to say, national interest was dominant in the national bank. These banks faced *inter alia* credit controls, administered interest rates, weak banking supervision, and limited scope of financial instruments. Even though they disbursed the largest share of loans, the commercial banks limited themselves mainly to short-term credit and more so are said to concentrate on financial export/import businesses, which also are mainly foreign-owned. The development banks were to fill the financing gap for long-term credit.

The BCD was created in 1960 as a government-owned specialized financial institution with a mandate to finance and provide technical assistance to all economic sectors. While BCD was mandated to offer both long- and short-term credit, it concentrated more on short-term lending. Up to about the end of the 1970s, its long-term credits had averaged 5 per cent a year. BCD, unfortunately, had been created on the wrong basis; hence it made the situation worse by shying away from long-term credit and competing with commercial banks in short-term lending. A development bank should provide innovative financial instruments, which could entail introducing new banking products and technologies that are lacking at other banks. FOGAPE served as specialized bank for small and medium-sized enterprises from 1975 with the aim of guaranteeing loans, but it failed to sustain its activities and fell short of serving the interests of small and medium-sized enterprises.

Regulating and Supervising the Financial Sector in Cameroon

The financial sector is regulated through laws, decrees and ordinances. The Ministry of Finance along with the National Council of Credit regulated banking conditions. Commercial banks in particular were governed by the banking law promulgated in March 1962 and modified in 1973 through Ordinance No. 73/27 of 30 August and supplemented particularly by Ordinance No. 73/28, Decrees Nos 73/513, 73/514 and 73/515 of 30 August 1973 as well as Ministerial Orders Nos 367/MINFI/CE of 29 December 1975 and 189/MINFI/CE of 19 July 1976. All commercial banks had to have their registered office in Cameroon, and the state was to hold at least one-third of the capital. Management was to be in the hands of Cameroonians. Decree No. 74/618 of 3 July 1974 laid out the regulation of financial establishments, a reformulation of the founding law in 1980 by Law No. 80/26 of 27 November to address the practice of banking and outline the 'Cameroonisation' of the banking sector. Ordinance No. 85/002 of 31 August 1985 addressed the activities of credit institutions. Each of the above either broadly or in detail outlined areas of application, the conditions of transacting business, management organization and appointments.

BEAC and the National Monetary Committee (NMC) were the supervisory bodies of the banking system. The NMC met quarterly to review the discount ceilings accorded banks and limits granted to individual businesses. The fact that the chair of NMC was a government minister is a good indication of the role government saw for itself in the decision-making of the central bank. In other countries, the central bank is privileged with independence from political influence.

Monetary Policy

From its creation in 1972 up to 1990, BEAC conduct monetary policy using quantitative and qualitative credit controls. Loans from BEAC to the public treasury were a semi-target of quantitative controls that were set in alignment with the need to maintain equilibrium between the monetary mass and the volume of activities in the economy. The other target of quantitative controls, credits to the economy and the instruments used, were 'individual limits', legal reserve ratios and rediscount rates. Individual limits were the prerogative of the National Council of Credit (NCC) and were set on a short-term basis for enterprises that applied through commercial banks.

The rediscount rates of the BEAC were set by the deliberations of the National Monetary Committee (NMC). Rediscounting was on the basis of refinancing provided by BEAC to different sectors of the economy. This was in line with selective credit policies practised in favour of priority sectors. It was on this basis that small and medium-sized enterprises, agricultural exports and social security were accorded preferential lending rates. Reserve requirements expected of the commercial banks determined the growth of credit. Higher reserve ratios restrict credit while low reserve ratios free up funds for lending and could grow credit.

Interest rates represent another instrument of monetary policy. Cameroon experienced low nominal interest rates for almost two decades leading up to the economic crises of the mid-1980s and 1990s while respecting interest rate ceilings imposed by the government. While unintended, these resulted in persistent negative real rates of interest.

These instruments of monetary policy constitute shallow finance, which has been shown to have a limiting effect on intermediation. Negative real interest rates, for example, make investments appear more attractive than they really are to both investors and banks. Low-yielding projects thus take funds that could have been put in truly worthwhile projects. The financial system ends up smaller and with less capability to finance projects. Otherwise, the banks become extremely cautious in their lending activities. In the mid-1980s, the Cameroon economy in general and the financial sector in particular exhibited the negative effects of some of the instruments that had been long applied. Nzongang (1997) states that money supply dropped by about 12 per cent within two years from mid-1986 to mid-1988 while the banking sector turned illiquid recording deficits of over 300,000 billion FCFA. Credit to the economy fell by 14 per cent. That partly explains the decrease in investment by 38 per cent in about the same period. BEAC as a regional central bank did not have a free hand in wielding monetary policy in a country. The government was greatly involved in dictating policies directly or through the National Council of Credit. Political interference in banking was also known. The banking sector had become so fragile that it was bound to collapse.

The Semiformal Financial Sector

The semiformal financial sector is made up of financial institutions that are cooperatives, and even though they offer banking services they do not fall under the purview of the supervisory authorities. The credit unions, organized under the Cameroon Cooperative Credit Union League (CAMCCUL), have been in operation since 1963 and represent the main institutions in this sub-sector. As of 1987, there were 122 credit unions and 160 pre-cooperative credit unions around the country, which represented the only near-formal financial institutions situated in the villages. Another version of semiformal financial institutions, *caisse populaires*, were introduced into Cameroon in the 1970s. The growth in numbers led to the creation of the *Union des Caisses Populaires* (UCP) as the apex organization under the Ministry of Agriculture's department of cooperation and mutuality, and it adopted the same statutes as CAMCCUL. The number of *caisses populaires* stood at 55 by 1982, and in addition to CAMCCUL and UCP, there were other savings and loan institutions in this sector.

The Banking Sector in Crisis

There were four major causes of the crisis in the banking sector in Cameroon, namely: the deteriorating macroeconomic environment, serious mismanagement of the banking system weaknesses in the supervisory mechanism of the banks, and the extraversion of the local banking system. These will be examined in turn.

Deteriorating Macroeconomic Environment

The deteriorating macroeconomic environment was manifested in various ways, including the sharp fall in the prices of the country's main export commodities in the world market (see Table 14.1); the depreciation (by 40 per cent) of the dollar with respect to the FCFA; expansionary budgetary policies that obliged the state use bank deposits and other resources to finance its expanding programmes; the significant increase in the nominal interest rate of the country's external debts; and the accumulation of arrears of internal debts that contributed to reducing private deposits. The combination of all these shocks resulted in liquidity crisis in the banking sector and induced massive fiscal deficits.

Table 14.1: Trend of Average World Market Prices of Major Export Commodities (CFAF)

	1984	1985	1986	1987	1988	1989	1990	1991	1992
Commodity									
Cocoa	1,067	1,039	760	627	529	437	382	381	300
Coffee robusta	1,326	1,166	1,094	651	597	554	337	302	254
Coffee arabica	1,405	1,456	1,593	782	883	801	532	521	431
Cotton	743	572	359	482	410	504	470	476	317
Crude Oil \$/barrel	28.3	27.0	13.8	17.8	14.2	16.9	22.0	18.1	18.2

	1993	1994	1995	1996	1997	1998	1999	2000
Commodity								
Cocoa	336	720	770	760	1,049	1,012	720	637.2
Coffee robusta	323	1,470	1,460	1,050	953	1,022	875	743.4
Coffee arabica	473	1,890	1,710	1,470	—	1,710	1,412	1,417
Cotton	350	850	1,050	920	1,000	1,740	720	739
Crude Oil \$/barrel	16.1	15.2	16.0	19.7	16.5	11.4	16.4	28.5

Source: DSN, *Cameroon in Figures*, 2000:24.

Mismanagement of the Banking Enterprise

The mismanagement of the banking system is one of the most cited causes of the banking sector crisis in Cameroon. Indeed, as Adam Madji (1997) notes, more than 90 per cent of bank failures were due to mismanagement and internal deficiencies. The state and management staff have been held responsible for the mismanagement. The state, as the majority shareholder in most of the banks, appointed management staff, directed credit policies and put portfolio restrictions on banks and used bank lending to finance fiscal deficits. The management staffs, most of whom were appointed by the state, were not professionals and lacked basic qualifications and competence. The management owed allegiance to those who had appointed them who were top government officials and hence were not always professional either. Their knack for generous and uncontrolled distribution of credits coupled with weak internal control mechanisms, poor administrative organization and structural

inability to react to negative situations, along with political influence-peddling and ineffective marketing strategy prevented banks from grasping the onset of the crisis so as to adapt their deposit collecting, loan and credit policies to the existing environment.

Inefficiency of the Bank Supervisory Mechanism

A serious handicap to the survival of the banking system was the gross inefficiency of the supervisory mechanism in the BEAC zone in general and in Cameroon in particular. As mentioned, the supervision of the banking system before the creation of COBAC was a joint responsibility of BEAC and the National Commission of Bank Control. The efficiency of this bicephal system rested on the fact that the reasoned opinion and recommendations of BEAC would be implemented, including meting out sanctions by the national commissions through the minister in charge of money and credit. Unfortunately, the laxity and procrastination of the ministers rendered inoperative the functioning of the national commission and discredited the entire supervisory system.

Extraversion of the Local Banking System

The extraversion of the local banking system also played an important role in triggering the crisis. This is because most of the banks were branches or affiliates of big multinational banking groups, and it was therefore easy to channel resources to mother branches to invest in international capital markets, thereby significantly contributing to aggravating or accelerating the reduction of liquidity in the economy. In addition, there was the problem of capital that originated from forms of malpractice, fraud and the informal sector.

The Financial Sector Reforms

The reform of Cameroon's financial sector was just one component of an overall reform of the economy, which had gone from a prolonged period of commendable growth to a drastic decline in all macroeconomic aggregates, income per capita, per capita consumption, investments, tax base and revenues and consequent increases in the public debt, worsening terms of trade and loss of competitiveness. These affected the liquidity of banks directly because the state, which had been a major client, was highly in debt and it reflected in the decline in deposits of the banks. Internal debt was on the increase as the government could not honour its bills with civil servants and domestic suppliers. This meant that these individuals could not meet their own obligations at the banks let alone save. The adverse macroeconomic situation added to the problems of mismanagement facing the banks.

The banks had to deal with political and administrative interference in their activities. In a situation like Cameroon's, with administratively fixed interest rates and portfolio restrictions on banks, the supply of funds that can be loaned are likely to be less than the demand. The credit rationing that arises is likely to be on political basis. That easily led to poor loan discipline, which included delinquency, deceit and diversion (Von Pischke 1981).

The banking system was buried under the weight of all the above. By mid-1987, a majority of the banks were technically insolvent, and in 1989, according to World Bank estimates, the aggregate deficit in the sector was about 300-375 billion francs CFA. The structural adjustment programme had to deal with rehabilitating the financial sector. Reform of this sub-sector was aimed at deepening financial intermediation to promote the growth of the real size of the financial system. An increase in the real size of the financial system works to increase the capacity of the system for intermediation, mobilizing savings from various sources and channelling them to productive uses by, for example, improving lending to the private sector. Other objectives of the reform include a reduction of government intervention, enhancing the role of market forces in allocating financial resources, promoting competition among banks and strengthening their financial soundness. A reformed financial sector was also to afford better instruments of policy to the monetary authorities. One can dare say that the success of programmes to restore growth in other sectors hinges on the reform of the financial sector.

Liberalization of Interest Rates

One of the initial steps taken to reform the financial sector early in the 1990s was to raise interest rates to levels that would ensure positive spreads for the banks. Preferential rates were eliminated and a single discount rate made applicable. BEAC and its customers could now freely determine interest rates that reflected inflation rates. The banks in turn were given autonomy with respect to their operational decisions. There were, however, maximum rates for lending and deposit set by BEAC with due consideration to market forces. Interest rates were revised eighteen times between March 1993 and September 1995 (Nzongang 1997). The maximum lending interest rate went from 17 per cent in mid-1993 to 22 per cent in the last quarter of 1997. The requirement to ensure that at least 20 per cent of their loans went to the small-scale sector, which went along with a special refinancing facility of BEAC, gradually faded away amid these reforms.

Monetary Policy Reform

Monetary policy is formulated within the Central African region by BEAC. This region is united under a regional grouping known as the Economic and Monetary Community of Central African States (CEMAC). The currency in use in the region is the CFA franc, which was pegged to the French franc at a rate of 1FF to 100CFAF and later pegged to the Euro. BEAC introduced monetary programming in 1991 to ensure that money creation was in line with other variables such as real GDP forecasts, budget balances, current account balances, expected level of inflation, anticipated foreign exchange reserves and the financing needs of banks. Given these parameters, BEAC sets its objectives at the beginning of each year with regard to the terms of refinancing, net foreign reserves and the growth in credit and money supply. The objectives can be reviewed during the year if there is need to do so. How much can be injected into the system without macroeconomic distortion is gauged in setting

the refinancing objective. The refinancing objective usually is taken for a ceiling that must be adhered to in any programme with the IMF. Financial programming in Cameroon resulted in weakened refinancing capacity, which declined by 45 per cent from 130 billion CFAF in 1990 to 72 billion CFAF in 1991 (BEAC 1994). During this period, credits to the economy decreased by 16 per cent (Nzongang 1997).

The creation of a money market in 1994 afforded BEAC greater capacity to conduct monetary policy. The money market allows for inter-bank transactions on conditions determined by the financial institutions involved, and the transactions are not be limited to the country but rather the BEAC sub-region under BEAC. Such Inter-bank transactions in 2001/02 averaged 7.4 billion monthly, a drop from a monthly average of 10.8 billion in 2000/01 (BEAC 2002). The central bank may inject or withdraw liquidity from the money market depending on the objectives pursued. The Cameroon financial institutions appear to place more liquidity in the BEAC than they get out, indicating that they have excess liquidity. While the money market provides an alternative point of call for both the government and commercial banks to seek to meet their financial needs, it must be noted that the market is still more or less rudimentary, and the scope of open market operations is likely to remain small for quite some time. There is a need to deepen the market. In spite of this, there is a tendency that might develop to using direct and discretionary controls of credit rather than indirect controls. Indirect controls include the use of instruments such as open market operations, reserve requirements and the discount rate.

Prudential Regulation and Supervision of Banking Institutions

The weak regulation and supervision of banks needed to be dealt with for reforms to have meaning in the financial sector and to stand a chance of succeeding. CEMAC charged a new institution with supervising banking institutions, namely the Banking Commission of Central Africa (COBAC). COBAC was created on 16 October 1990 and became operational in July 1992. It works by attempting to harmonize the banking regulations in Cameroon, carrying out on-site supervision of all banks at least once a year. The prudential norms adopted by COBAC are in the spirit of those set out by the Basel Committee on Bank Supervision. Various solvency norms applicable include the weighted risk asset ratio, risk concentration ratio, fixed asset coverage ratio, equity investments and debt equity ratio. The liquidity ratio and the maturity transformation ratio make up the liquidity norms.

COBAC formulates regulations stipulating the conditions and modalities of licensing banks, their management and auditors as well as the treatment of cheques. Cheques can no longer be cashed over the counter for security reasons. A new cooperative law passed in 1992 sought to promote micro-finance institutions and formally recognized registered indigenous savings and credit associations as financial intermediaries. Furthermore, the government created the Decentralized Financial System (DFS), which would complement the banking sector by providing financial services to or enhancing them for those not served by the banking sector. The DFS therefore dealt with issues concerning existing financial intermediaries by consolidating

their development and regulating them, participatory management by members, encouraging the financing of rural activities in a sustainable manner and forging links with the banking system.

Restructuring in the Banking Sector

The first phase of restructuring of the banking sector took place between 1989/90 and 1991/92 to address the technical insolvency of the sector. A number of banks were liquidated, including SCB, CAMBANK, PARIBAS-CAM and BIAOC. Others were rehabilitated, such as BICIC and SGBC, while two new ones were created, the CAC and IBAC. A national loan recovery agency was set up to manage non-performing assets, which at the time amounted to 77 billion francs CFA.

The situation deteriorated seriously again by 1995 and a second phase of restructuring was enforced from December 1995 to June 1997. More banks were liquidated, including BMBC, BICIC and CAC; others, such as SCBC and SGBC, were recapitalized; and the BICEC was created anew and given the liabilities and performing assets of BICIC. The non-performing banks were transferred to SRC. The total cost of restructuring was estimated at 513 billion francs and was to be shared between the government, BEAC, the World Bank and the African Development Bank. Other measures in the restructuring consisted of converting arrears to bonds and thus relieving the pressure of creating money from the government in the short to medium term to finance its deficits. The loan recovery agency had to handle doubtful claims while managing the liquidation of the insolvent banks.

It should be added that the capital structure of the rehabilitated and newly created banks was reviewed. By the new regulation minimum capital for any bank had to be at least one billion FCFA, up from 300 million, and minimum equity capital was also raised to at least 5 per cent of deposits collected. There was a maximum compliance period of two years for all banks. Most banks reacted by raising the minimum amounts for opening accounts. The state was to disengage from the financial sector, hence turning it over to the private sector to a large extent.

Restructuring of the Insurance Industry

The insurance industry in Cameroon is concerned largely with fire/accidents (diverse risks) and life insurance. The reform of the insurance sector was launched in 1995 when the three government-owned companies were restructured. These were Assurances Mutuelles Agricoles du Cameroon (AMACAM), Société Camerounaise d'Assurances (SOCAR) and Caisse Nationale de Reassurance (CNR). By the end of the reform period, AMACAM was liquidated and SOCAR and CNR were privatized. There are now about twenty insurance companies, twelve for diverse risks and six for life insurance. The dominant companies for coverage of diverse risks are AXA and CHANAS, and for life coverage Beneficial Life and SNAC. The insurance industry abides by the code of the Conference Internationale des Marchés d'Assurances (CIMA), in which specified norms and procedures are ensured and enforced by the insurance division in the Ministry of Economy and Finance. These regulations

have to do with minimum capital requirements, minimum liquidity ratios and solvency ratios. The division carries out both on-site and off-site supervision, and sanctions are meted out when necessary.

The Decentralized Financial System

In 1992, during the period of recovery, a large number of other savings and credit institutions sprang up under the auspices of the Mutuelles Communautaires de Croissance (MC2) promoted by the Caisse Commune d'Epargne et d'Investissement (CCEI). Among the new micro-finance institutions to emerge were the Appui aux Strategies Paysannes et la Professionalisation Agricole (ASPPA), Fonds d'appui aux Organisations Rurale (FONDAOR), Fonds de l'Investissement des Micro-realizations Agricoles et Communautaires (FIMAC) and Cellule Centrale de Reforme de l'Organisation du Monde Rurale (CUROR). The informal financial sector is comprised of unregulated indigenous savings and credit associations popularly known as *njangis* or *tontines* (which date back to time immemorial), local moneylenders, and intra-family transfers among others.

Assessment of the Financial Sector Reforms in Cameroon

We have shown clearly that the financial sector has a significant role to play in the development of the private sector and consequently on the growth of the economy. Financial intermediation supports sustainable development of the economy, and if that fails, alternatives have to be sought that will include the government budget, foreign investment and foreign aid. Financial liberalization following the model of McKinnon (1973) and Shaw (1973) increases the capacity for intermediation, and to a large extent, financial sector reform in Cameroon, as in many developing countries, adopted this approach. An assessment of the financial system and the effectiveness of the financial sector reforms is undertaken partly by determining and comparing the real size of the financial system before and after the reforms. A financial system with enhanced intermediation capacity will be able to mobilize a greater volume of deposits and provide more loans to the private sector. This will be partly attained when formerly negative real interest rates become positive and legal reserve ratios are reduced to release funds that can be allocated to productive uses. According to Fry (1989), an assessment of bank performance under non-competitive conditions cannot predict profitability but rather should include the efficiency of payments, savings mobilization, costs of intermediation and allocation of funds among investment options. For a post-reform financial sector, these could be pointers to what indicators are appropriate for evaluating efficiency.

This section contains an assessment of the reforms in Cameroon using financial indicators, each of which is compared for the period prior to and after the reforms. They include the extent of interest rate liberalization by analysis of rates before and after the reforms and then assessment of the real size of the financial system by using the ratio of deposits to GDP indicator.

Achievements of the Reforms

The autonomy of the central bank has been established in accordance with worldwide trends. Indirect instruments of monetary policy have been preferred over direct instruments. State-owned banks have been privatized and foreign banks have been allowed to enter the banking sector with the hope of fostering a competitive environment. The security and solidity of the banking system has been restored, government practice of lending to insolvent parastatals has been dismantled and the much-needed prudential norms and supervisory standards have been adopted and are being implemented by COBAC. Most successfully, public confidence in the banking system is being restored, as seen by the gradual increase in private deposits (see Table 14.2).

Table 14.2: Growth of Private Deposits

Year	Deposits (in billions FCFA)
1995	537.2
1996	561.6
1997	450.9
1998	500.1
1999	559
2000	700
2001	761

Source: Banque de France, *La Zone France: Rapport Annuel* 2001 :196.

After more than a decade of banking sector reforms, the banking system could be considered more secure and solid than before the reforms started. Yet it remains poorly suited to the country's needs. The banking system is still plagued by the unwillingness of many bankers to take risks and back good ventures, by the lack of modern banking products and the generally poor quality of service. In addition, it is difficult to access loans particularly for the small and medium-size firms that are the engine of the private sector as well as those seeking long-term funding. These deficiencies undermine a major aim of the banking sector reforms, namely boosting bank lending to the private sector, and thereby compromise the success of the economic liberalization policies in general. These failings bring to focus the fact that the reforms have only been relatively successful and a limitations remain that need to be addressed in order to boost bank lending to the private sector.

Limitations of the Banking Sector Reforms

Despite the achievements of the banking sector in restoring public confidence in the banking system, much more needs to be done in order to render the banking sector a real instrument of economic growth. The present reforms have limitations in a number of areas including the absence of specialized banks, lack of competition between the banks, weak diversification of financial products, the problem of in-

frastructure asymmetry and an unfavourable institutional environment. These will be looked at in turn.

Absence of New and Specialized Banks

As in the industrialized countries where banking sector reforms had taken place, the reforms in Cameroon were expected to result in the expansion and growth of the banking industry in order to render it more responsive to the growing needs of the economy. The limitations to the reforms in this domain can be examined in terms of the number of banks in operation, the growth of the banking system and the absence of specialized banks. In terms of the number of banks in operation, the reforms brought about a reduction in the number of commercial banks (11 before the reform and 10 after) as well as a reduction in their branches and the absence of development banks (Table 14.3). The growth of the banking system can be measured by the ratio of the domestic credits provided by the banking sector to the GDP. Available statistics from the World Bank indicate a contraction of this ratio of 47 per cent, moving from 31.2 per cent profits in 1990 to 16.4 per cent profits in 2001. This confirms the fact that bank lending is not boosting the growth of the private sector, contrary to reform objectives.

Table 14.3: The Banking Network in Cameroon

Number	Name	Capital (CFA F, m)	Capital Structure (%)		No of Permanent Branch Offices
			State	Private and others	
1	BICEC	3,000	10	90	26
2	CLC	6,000	35	65	15
3	SGBC	6,250	25.6	74.4	15
4	SCBC	3,500	-	100	3
5	Afriland First Bank	3,005	-	100	11
6	Amity Bank	1,300	-	100	6
7	Citibank	3,163	-	100	2
8	CBC	7,000	-	100	5
9	UBC	2,000	-	100	3
10	Ecobank	2,500	-	100	1

Source: authors, with data from BEAC, *Lexique des Banques au Cameroun*, Yaoundé, 2001.

As regards specialized banks, close to five years after the reforms, the only specialized banks were the ten commercial banks listed in the table. These banks offered short-term financing of the tertiary sector of the economy, particularly commercial activities, but there were no equivalent institutions to finance the primary and secondary sectors of the economy, which harbour the strategic sectors of agriculture, and small and medium-size enterprises and industries. The country's growth potential resides in these sectors, but there remains an absence of appropriate financing instruments, both for investments and running capital.

Lack of Competition between the Banks

Deregulation implies the use of competition as a weapon for economic policy and the market being allowed to promote economic activity. According to Touna and Fouda (1996), deregulation in the banking sector involves competition on two fronts, between the banks on one hand and between the banks and other financial institutions on the other. On both measures, the banking sector reforms have not resulted in increasing competition. The sector is cartelized, extremely rigid and dominated by four main banks. The large intermediation margin resulting in exorbitant high real rates of interest (Table 14.4) discourages borrowers. Worse still, bank portfolios tend to be concentrated away from long-term financing, thus being detrimental to investment and growth.

Table 14.4: Growth of Interest Rates (percentage points)

	1995	1996	1997	1998	1999	2000	2001
Discount Rate (1)	8.60	7.75	7.50	7.00	7.30	7.00	6.50
Deposit Rate (2)	5.50	5.38	5.04	5.00	5.00	5.00	5.00
Lending Rate (3)	16.00	22.00	22.00	22.00	22.00	22.00	20.67
Spread or Intermediation Margin (4)	10.50	16.62	16.96	17.00	17.00	17.00	15.67

Source: IMF, *International Financial Statistics Yearbook*, Washington, DC:IMF, 2000:216.

Weak Diversification of Financial Products

The reforms have not had a significant impact on the creation and diversification of new financial instruments. Financial innovations were anticipated in the domain of products, procedures and the market, but no progress was made.

Diffusion of Infrastructure

That the reforms have not succeeded in addressing the problem of diffusion of infrastructure is seen by the prevalence of high credit as indicated by the high value of non-performing loans. This partially explains the reduction of bank levelling to the private sector as credit risks tended to be high (Table 14.5).

Unfavourable Institutional Environment for Bank Lending

A notable weakness in the banking sector reforms is that government failed to provide an adequate ethical environment for the recovery of bank loans. It was alleged that corruption was fairly pervasive throughout government and business, and court decisions were often arbitrary and subject to corruption. The US Department of Commerce alleged that lawyers are frequently unethical, and that Cameroon courts were too complicated and costly to resolve contract or property rights disputes. Most analysts attribute the banks' reluctance to lend to outdated bankruptcy laws that heavily favour debtors. Consequently, the banks are unhappy with the justice system, which is accused of collusion with unscrupulous individuals

and corrupt lawyers. While the adoption of the OHADA system in Cameroon might alleviate the problem, a decisive political will is needed to address the problem of the judicial system.

Table 14.5: Growth of Credit to the Private Sector (in millions of FCFA)

Year	Domestic Credit	Claims on the Private Sector
1987	805 496	1 014 560
1988	974 852	897 645
1989	1 061 700	887 415
1990	1 044 880	894 448
1991	1 264 640	892 946
1992	831 911	400 080
1993	805 220	368 810
1994	797 846	369 535
1995	791 344	371 390
1996	762 816	385 890
1997	806 096	348 135
1998	881 158	426 815
1999	959 537	481 464
2000	952 029	543 950

Source: ADB, *Selected Statistics on African Countries*, Abidjan: African Development Bank, Vol. 21, 2002:82–3.

Policy Recommendations

The limitations of the reforms raised in the preceding section render the banking system inefficient to promote bank lending particularly to the private sector, which is regarded as the engine of economic growth. In order to improve the performance of the banking system and render it more responsive to the needs of economic growth, the following policy recommendations are proposed: creation of specialized banks, diversification of financial products, building information and research capacity as well as strengthening the institutional environment. These recommendations are examined in more detail below.

Creation of Specialized Banks

Specialized banks could be set up to finance strategic sectors of the economy such as agriculture and to promote small and medium-size industries and enterprises. Similarly banks specializing in venture capital could be established in order to promote start-up firms. Specialized banks offer the advantage of mastering the risks inherent in their market environment and thus are more likely to achieve better results. Government intervention in this domain is crucial since the private sector has failed to provide the instrument.

Diversification of Financial Products

Diversification of financial products will produce instruments that will enable economic operators to (i) hedge against credit and interest rate risks, (ii) increase their liquidity position, (iii) improve their credit capacity, and (iv) strengthen their net worth. It is to be hoped that the nascent financial market, the Douala Stock Exchange and the regional financial market planned for Libreville (Gabon) will work to provide these instruments and create stronger capital markets.

Building Information and Research Capacity

Improving on information diffusion requires that there are appropriate institutions for building and disseminating information. This also implies that competent staff, equipment and legislation exist for information research, treatment, analysis and dissemination. This flow of data is critical to offer banks the capacity for proper risk assessment and control of their lending operations. Besides, it allows for timeliness and reliability of financial data, which are desired for making reliable estimates of investment risks by correctly assessing the viability and creditworthiness of borrowers. Minimizing information asymmetry through building information and research capacity will therefore drastically reduce the risk of loan default and increase the lending capacity of the banks. The creation of reliable institutions for the collection and diffusion of information would help to minimize the problem of accountability, which has been blamed as contributing to bank crisis. Consequently, this will strengthen savings mobilization and improve on resource allocation since information will be available on time to enable the right investments decision to be made.

However, building adequate information and research capacity in the banking system may be quite expensive, considering the small size of individual economies and markets. The solution lies in synergy and team efforts through regional cooperation. The efforts of BEAC and COBAC could be intensified in this domain.

Strengthening the Institutional Environment

The institutional environment for bank lending needs to be strengthened. In order to achieve this, legal reforms are required to support the enforcement of contracts, the operation of foreclosure laws, and to facilitate loan collection by banks. The institutional environment for bank lending will be strengthened by enforcing compliance with the relevant banking laws, by setting up independent specialized courts to deal with the settlement of financial contractual cases. In this way, greater scope will be provided for screening borrowers, collecting non-performing loans and reducing lending risks. By reducing non-performing loans and thereby safeguarding their capital base, these measures would help improve the lending capacity of the banks.

In Cameroon, just as in other member countries of the BEAC zone, financial sector reforms were carried out as a response to the economic crises in the mid-1980s. The economic crisis was caused by the drastic fall in the world market prices

of the country's export commodities, expansionary budgetary policies and a significant increase in the nominal interest rate of the country's external debt. These factors caused a sharp fall in public and private bank deposits and came to reveal the mismanagement problem and distorted policies in the banking system. These included the predominance of state-owned banks, appointment of management staff, directed credit policies, application of negative interest rates, inadequate regulatory framework for supervision and control, and flagrant political intervention in the activities of the banking system. As a result, there were mounting default payments and a high incidence of non-performing loans, causing many banks to become illiquid, insolvent and bankrupt. The banks could no longer carry out their functions efficiently with regard to savings mobilization and resource allocation, with the erosion of public confidence.

The government reacted by accepting the task of carrying out banking sector reforms within the framework of structural adjustment programmes put in place by the International Monetary Fund and the World Bank. The reforms included the liberalization of interest rates, adoption of monetary programming, creation of a money market, adoption of prudential norms, creation of COBAC and the setting up of a financial market. In addition, a restructuring programme was carried out during which many banks were liquidated, some were rehabilitated and others privatized.

The reform measures had the merit of restoring solidity and soundness to the banks. But the effectiveness of the reforms was limited in a number of ways: an absence of new and specialized banks, to the neglect of strategic sectors of the economy; the lack of competition between banks; weak diversification of financial instruments; weak information-building and research capacity, and an unfavourable judicial environment that does not facilitate loan recovery by banks and accentuates the problem of pervasive credit risk. These limitations have the effect of drastically reducing bank lending to the private sector, the engine of economic growth, and therefore further reforms are necessary.

Policy proposals include the creation of specialized banks and venture capital companies to finance strategic sectors of the economy and start-up firms; improving the legal and judiciary environment; strengthening banking supervisory capacity; building information and research capacity, and diversification of financial products. The intervention of the state is crucial in setting up the specialized banking institutions and for providing a favourable macroeconomic environment for these institutions to perform well. The organization and performance of the banking system affect the growth of the whole economy, given that the banking system has a fundamental impact on how businesses raise and manage funds. A major role of the banking system is to intermediate between savers and borrowers of funds and also to cycle the available funds where they are needed. It is important to render the financial system more efficient in order to favour economic growth.

References

- African Development Bank, 2002, *Selected Statistics on African Countries*, Abidjan: African Development Bank, Vol. 21.
- Amin, Aloysius Ajab, 2000, *Long-Term Growth in the CFA Franc Zone Countries*, Research in Progress 25, Helsinki: United Nations University/WIDER.
- Amin, Aloysius Ajab, 2002, *An Examination of the Sources of Economic Growth in Cameroon*, AERC Research Paper No. 116, Nairobi: AERC.
- Amin, Rebecca, Regina Tawah and Aloysius Ajab Amin, 2000, 'Financial Sector Reforms and Women Survival Strategies'. In: *Demanding Dignity: Women Confronting Economic Reforms in Africa*, Ottawa: The North-South Institute.
- Basu, Anupam, 'Banking System Reforms in Sub-Saharan Africa: Status and Challenges', Washington, DC <<http://www.imf.org>>.
- Banque de France, 2002, *La Zone Franc: Rapport Annuel 2001*, Paris: Banque de France.
- BEAC, *Lexique des Banques au Cameroun*, Yaoundé: Banque des Etats de l'Afrique Centrale <<http://www.beac.int/index.asp>>.
- BEAC, *Situation du Système Bancaire de la CEMAC à Fin Septembre 2002*, Yaoundé: Banque des Etats de l'Afrique Centrale <<http://www.beac.int/index.asp>>.
- Bikomen, Magloire, 1996, 'Crise et Dereglementation dans les Secteurs Industriel et Commercial'. In: *Crise Economique et Politique de Dereglementation au Cameroun*, Paris: L'Harmattan.
- Brownbridge, Martin, 2000, *Lessons from Banking Reforms in Africa* <<http://www.africaonline.com/site/articles/1.3.66.jsp>>.
- NSA, *Etude Economique et Financière des Entreprises en 1992–93*, Yaoundé: Ministry of Economy and Finance.
- DNSA, 2001, *Cameroon in Figures 2000*, Yaoundé: Ministry of Economy and Finance.
- Fry, Maxwell, 1989, *Money, Interest and Banking in Economic Development*, 2nd edn, Baltimore: Johns Hopkins University Press.
- Ewane, Vinatius Bweh, 2003, 'The Limitations of the Banking Sector Reforms in Cameroon', Report of Master's degree (DESS), Yaoundé: University of Yaoundé II.
- Gauthier, Bernard et al., 2002, 'A Firm's-Eye View of Commercial Policy and Fiscal Reforms in Cameroon', *World Bank Economic Review*, Vol. 15, No. 3.
- George, Susan, 1999, *A Short History of Neoliberalism*. Conference on Economic Sovereignty in a Globalizing World, 24–26 March <http://www.globalpolicy.com/the_globalising/histnes.htm>.
- GICAM, 1983, *Bilan de l'année 1982–83*, Douala: GICAM.
- IMF, 2003, *International Financial Statistics*, Washington, DC: IMF.
- Joseph, Ann, 1999–2000, 'La Reforme du Secteur Financier en Afrique', *Finance Nationale et Développement*, December 1999– March 2000.
- Kane, E.J. and Tara Rice, 2001, 'Bank Runs and Banking Policies: Lessons for African Policy Makers', *Journal of African Economics*, Vol. 10, Supplement 1, p. 67.
- Madji, Adam, 1997, *Point sur la Restructuration Bancaire en Afrique Centrale*, Communication sur la mobilisation de l'Epargne Longue et le Financement des Investissements en Afrique Centrale, Libreville, 24–26 March.
- McKinnon, R., 1973, *Money and Capital in Economic Development*, Washington, DC: Brookings Institution.

- Nzongang, J., 1997, 'Integration Monetaire et Crise des System Bancaires en Zone Franc: Cas de la ZMAC', These de Doctorat, 3eme Cycle, Yaoundé.
- Odedokun, M.O, 1996, 'Alternative Econometric Approaches for Analyzing the Role of the Financial Sector in Economic Growth: Time Series Evidence from LDCs', *Journal of Development Economics*, Vol. 50, pp. 119–46.
- Organization for Economic Cooperation and Development, 2002, *African Economic Outlook 2002*, Paris: OECD Publications.
- Shaw, E., 1973, *Financial Deepening in Economic Development*, New York: Oxford University Press.
- Touna, Mama and Isaac Tamba, 1996, 'Crise et Dereglementation dans le secteur des Entreprises Publiques et Parapubliques'. In: *Crise Economique et Politique de Dereglementation au Cameroun*, Paris: L'Harmattan.
- Touna. Mama and Seraphin Fouda, 1996, Crise et Dereglementation dans le secteur Bancaire'. In: *Crise Economique et Politique de Dereglementation au Cameroun*, Paris: L'Harmattan.
- Touna, Mama and Roger Tsafack-Nanfosso, 2001, 'L'Economie Camerounaise: De la Crise à la Reprise'. In: *Cameroun 2001, Politique, Langues, Economie et Santé*, Paris: L'Harmattan.
- US Commercial Service, 2001, *Cameroon Country Commercial Guide FY2001* <[http://www.usatrade.gov/website/ccg.nst/ccgurl/ccg-cameroon 2001-.c.0066 235](http://www.usatrade.gov/website/ccg.nst/ccgurl/ccg-cameroon%2001-.c.0066%2035)>.
- Von Pischke. J.D., 1981, *The Political Economy of Specialized Farm Credit Institutions in Low Income Countries*, World Bank Staff Working Paper No. 466, Washington, DC: World Bank.
- World Bank, 2002, *World Development Indicators 2002*, Washington, DC: World Bank.
- World Bank, 2003, *World Development Indicators 2003*, Washington, DC: World Bank.

Determinants of the Level of Taxation in Cameroon

Dorothy Nkogko Agbor

Introduction

The Cameroon government's role in national life is increasing, particularly in income and wealth redistribution, internalization of externalities, regulation and supervision of the economy, and the provision of public goods and services. All these entail huge costs. Hence, financial resources must be constantly mobilized in ever-growing amounts, from various sources, to satisfy the rapidly expanding demands for spending. There are four possible ways through which governments can mobilize revenue: (i) simply print more money and use it to purchase goods and services; (ii) charge for the goods and services they provide to their citizens; (iii) borrow either from their own citizens or from abroad; or (iv) raise revenue through taxation.

Taxation remains the most appropriate way to mobilize resources to finance government expenditure. Taxation is therefore a powerful policy instrument that has the dual role of securing resource transfers to the public sector for application to planned uses and inducing the private sector to operate in conformity with planned objectives. It is known that taxation creates distortions as such authorities must design a tax policy that is capable of raising adequate revenue to meet a government's revenue targets while minimizing the level of associated distortions. Given the comparatively limited amounts of resources that are ordinarily possible and prudent to obtain from abroad and from non-tax revenues, many developing countries have felt the need to raise the necessary revenue internally. The level of taxation is usually judged in terms of the ratio of taxes to some measure of national income. What elements should be included in the numerator and the denominator of the ratio would depend on what aspect of the government's role one wishes to reflect on.

In assessing the actual and potential tax level of any country one must take into account not only the stage of development and the structure of the economy but also the economic philosophy of the country and its relevant special circumstances (Amin 2000). In the past, efforts have been made to estimate 'tax capacity' by

applying cross-sectional parameter values of explanatory variables such as per capita income, sectoral distribution of income and openness of the economy. However, there is an increasing recognition that tax capacity depends not only on tangible economic characteristics but also on a variety of non-economic factors such as political will, administrative efficiency and culture of tax compliance.

In this chapter we investigate the level of taxation in Cameroon for the period 1972–2002. The approach employed is not merely to provide statistical analysis but also to offer a qualitative appraisal of tax level trends in Cameroon for the period under study. The main aim is to ascertain how the tax system of Cameroon can be structured to take advantage of the potential for growth as more advanced sectors develop over time. Thus, the principal objective is to analyse the impact of economic and non-economic factors on the level of taxation in Cameroon.

The rest of the chapter unfolds as follows: a section on theoretical considerations and reviews of past empirical studies is followed by an outline of Cameroon's macroeconomic performance and analysis of the interaction between this performance and the level of taxation; the next section presents the empirical framework and summarizes the estimation results, and the last section is devoted to drawing inferences from the research findings and concludes with ensuing policy implications.

Statement of the Problem and Significance

To make up budget deficits, the Cameroon government had to borrow heavily. The seriousness of the problem forced the government to abandon some of its development objectives and devote the greater part of new loans to paying off old ones. An analysis of the performance of central government current revenue indicates that during the period of high growth rates (1978–85), the average tax ratio to GDP was 17.1 per cent. During the economic recession period (1987–93), the ratio was 13.8 per cent and during the reform and return to growth period (1994–97), the ratio stagnated at 13.9 per cent. These figures reveal that the tax ratio has been declining since 1987 albeit efforts made by the government to stimulate the economy through extensive economic and fiscal reforms.

Yet the average level of taxation is still considerably lower (14.6 per cent) than that in other Economic and Monetary Community of Central Africa Countries (CEMAC). For example, in Gabon, during the period 1980–91, the average tax ratio amounted to 34.5 per cent. Even during the recession period, the tax ratio in Gabon at 28.7 per cent remained considerably higher than that in Cameroon. In Congo (Brazzaville), in the period 1992–2001, the tax ratio was 26 per cent.

There were also significant shifts in the contribution of the different categories of taxes to the overall tax revenue in Cameroon. In the late 1970s, international trade tax was the largest single source of revenue, contributing about 34.7 per cent to total revenue. In the period 1981 to 1986, oil revenue constituted the single most significant source, contributing over 27 per cent, on average, to overall revenue. From 1997 to 2002, taxes on domestic production and internal transactions became the most important source of central government revenue. This tax category,

constituted mainly of the VAT and excises, contributes, on average, about 31.6 per cent to total revenue. The second most important source remains revenue from oil, which contributes, on average, 25.7 per cent to total revenue. Our interest in this chapter is to identify those factors that have been responsible for this tax revenue trend in Cameroon.

Quantitatively oriented studies on level of taxation have regressed T/GDP on a combination of the traditional determinants. While acknowledging the importance of these studies, comparisons of tax level determinants for developing countries cannot pinpoint the factors that affect the level of taxation in a particular country and at a particular point in time. An informed opinion on such questions should take into account economic, socio-political and a variety of other factors. The cross-section analysis that most studies have extensively used may not be efficient in inferring the responsiveness of a given country's tax ratio to changes in economic structure (Bahl 1971a and b; Bird 1976). Moreover, tax systems differ and each has its own characteristics and peculiarities that purely statistical summaries cannot capture (Tanzi 1987). Hence, this chapter contributes to the literature in two ways: first, tax level is analysed for an individual country – Cameroon – with data spanning over three decades (1972–2002), on the argument that an investigation of the determinants of the level of taxation in Cameroon would contribute to a better understanding of the factors that can boost its tax revenues; and second, an attempt is made to integrate the traditional determinants and some macroeconomic policy determinants in analysing the tax level trends in Cameroon.

Theories of Tax Level Determinants Theoretically, the level of tax revenue, expressed as a percentage of gross domestic (or national) product (T/GDP), for any given country is a function of a number of interrelated, identifiable factors, which, for the most part, have an influence on the ability of governments to raise tax revenue. These factors include, among others, the structural characteristics of the economy, the desired growth rate in income, the policy-making process, macroeconomic policies and other national goals. Less implementation of policy accompanied by meagre resources for administering the policy will impact negatively on the ability to raise revenue. Similarly, political factors affect the extent to which policy is implemented.

Radian (1980) contends that rich societies have the ability to formulate tax policies that impose a heavy burden on anyone who can afford to pay, because their social and political structures are plural. In poor developing countries, in contrast, political feasibility is limited by the dominance of a small number of business interests. In light of the above issues, the level of taxation in any country would be determined by policy and the extent to which it is implemented. As a country grows, its economy moves away from simple forms of agricultural production and manufacturing to more complex and large-scale industries. A greater number of people are employed in a small number of large establishments. Many products and services move through formally organized markets where money can be diverted into government treasury coffers (Musgrave 1969).

Taxable Capacity Approach

Taxable capacity is said to be a function of both wealth and the constraints on and opportunities for tapping it. The procedure of taxable capacity, as developed by Lotz and Morss (1967), was based on the regression of the tax/GNP ratio on some factors likely to affect tax levels in developing countries. Their results suggested that the availability of taxable bases is a more important determinant of tax levels in developing countries.

Thorn (1967) suggests that taxable capacity determines revenues because economic development influences potential and the willingness to use it in the same way. Hence, increments of capacity brought about by economic development will be matched by increments in the desire to spend. This assumption is rejected in Lotz and Morss' (1970) other study in which they calculated taxable capacity for 52 countries on the basis of three factors: (i) size of the foreign trade sector in the economy; (ii) degree of monetization; and (iii) size of the mineral and oil sector. Their results revealed substantial differences between what a country can mobilize (according to the taxable capacity theory) and what it actually collects. Thus taxable capacity is only a rough indicator of a country's revenue potential, and does not determine the extent to which the potential will be utilized. Some scholars argue that this depends on tax effort.

Tax Effort Approach

Tax effort has been defined as the degree of intensity of the government's willingness to tap available resources. The tax effort approach concentrates on qualitative factors, which, though difficult to quantify, play an important role in determining whether a country ends up with a high or low tax level. These factors include: (i) quality of the tax administration; (ii) resources that a country allocates to this function; (iii) honesty of the taxpayers; (iv) degree of corruption among tax collectors; (v) size of penalties for non-compliance by taxpayers and for corruption by the tax administration; (vi) income distribution of the country; (vii) attitude of the citizens towards the government, which may be influenced by the quality of public services and by the inefficiency with which tax revenues are spent; and (viii) form of government.

Musgrave (1969) contends that revenues are determined not only by what could be attracted from the economy but also by the ability of the government to implement its fiscal policies. More recent literature (e.g. Shah and Whalley 1991; Burgess and Stern 1993) has emphasized the need for tax level determinants analysis to take into consideration certain features that characterize developing countries. Tanzi (1987) posits the influence of government macroeconomic policies that can affect tax revenue by changing, for example, the real value of the exchange rate; the degree of import restrictions; the level of public debt; the level of interest rates; and the rate of inflation.

Review of Earlier Studies

Lotz and Morss (1967, 1970), in the first modern cross-country studies of tax ratios, developed a model that has become a standard for future studies:

$$T/Y = c_0 + c_1Y + c_2 [(X + M)/Y] + e.$$

They built their model on a sample of 72 countries and separately for high- and low-income countries. Their results revealed a significant positive relationship between the tax share and both per capita income and degree of openness (measured by the sum of imports and exports divided by GNP) for the entire sample and for the low-income sub-sample, but not for the high-income sample. Furthermore, Lotz and Morss tried to estimate the effects of export composition and government centralization, and found that concentration of exports in a few commodities could lead to a higher level of taxation. On the other hand, they observed that the existence of lower levels of government (decentralization) is often associated with higher tax levels, contrasting Thorn's (1967) earlier results that suggested higher tax levels under more centralized governments.

Kilman Shin (1969) attempted to broaden the Lotz–Morss study by adding the following independent variables to the model: ratio of agriculture to total income, rate of growth of population, and rate of growth of prices. His results showed that per capita income would help to distinguish between tax ratios in high-income versus low-income countries but would not do so within the same group. Bahl (1971a and b) proposed a different model for explaining tax shares in developing countries. He found taxable capacity to respond negatively to higher agriculture shares and positively to mining shares, reflecting the higher taxable capacities of countries that have achieved a higher stage of development through the export of minerals or oil. The implications of Bahl's results are that countries that have achieved a higher level of development via import substitution and the growth of non-mining exports have a taxable capacity greater than countries at low stages of development, but less than those with large mining shares of income.

Analysis of previous studies (Chelliah et al. 1975; Tait et al. 1979; Leuthold 1989; Tanzi 1987; Lotz and Morss 1970; Bahl 1971a and b) brings out the following general points:

- (i) When developed and developing countries are taken together, a close relationship exists between per capita income and tax ratio. If tax ratio differences among less developed countries alone are considered, per capita income has been found to be less effective as an explanatory factor.
- (ii) Most of the studies concentrated on factors that could possibly influence the tax ratio via their effects on the ability of the populace to pay taxes or the capacity of the governments to collect them.
- (iii) Per capita income and the openness factor have been extensively used by all the studies. On the other hand, degree of openness is also considered as a factor that facilitates tax collection directly as well as through its effects on other characteristics of the economy.
- (iv) Most of the studies have emphasized more the level of development than the structure of the economy.

Macroeconomic Performance

The history of Cameroon's post-independence social and economic evolution can best be understood within the framework of four distinct periods as indicated in Table 15.1 and analysed below.

Table 15.1: Selected Economic Indicators, 1963–2000 (period averages)

	1963–77	1978–86	1987–93	1994–2000
Real GDP Growth Rate	4.6	8.8	–4.0	3.6
Per Capita Real GDP	1.2	5.6	–6.5	0.7
Growth Rate Inflation Rate In percent of GDP	6.6	11.3	2.1	.1
Gross Domestic Investment	17.9	24.9	18.2	17.1
Private Investment	15.9	16.2	11.4	15.1
Government Investment	2.0	8.7	6.8	1.9
Total Revenue	16.6	19.2	14.1	13.2
Current Expenditure	15.5	11.8	16.3	17.7
Capital Expenditure	2.0	8.7	6.8	1.9
Overall Budget Balance	–0.9	0.8	–7.3	–6.4
External Public Debt	Na	106.5	46.3	88.3

na: data not available.

Source: computed by author using data from various sources.

Decade of the Organization of Productive Structures (1963–77)

From the early 1960s, Cameroon went through a period of economic growth sustained by global stability in the terms of trade and rapid expansion of agricultural exports benefiting from the coffee price boom in 1976–77. At this time, government's emphasis was on economic and industrial development, based on establishing large, state-owned enterprises. Government adopted a protectionist trade strategy manifested by tariff barriers and quantitative restrictions on imports, and widespread price controls. Tariffs on imports and exports were applicable at rates that ranged from 2.5 per cent to over 150 per cent. Agriculture played a dominant role and was the main economic activity. It provided more than one-third of the GDP and represented more than 90 per cent of total exports.

Decade of Sustained Growth (1978–86)

The economy remained dependent on agricultural exports through to 1977 but the situation changed in the 1980s with the discovery of offshore oil whose production started in 1978. Cameroon began exporting oil and, as oil prices surged in the early 1980s, the country experienced its second positive shock benefiting from the oil boom. Thus the early 1980s were described as golden years for Cameroon. The share of GDP of the secondary sector (including mining, manufacture and public works) rose from 19 per cent, on average, during 1965–77 to an average of 28 per cent during 1978–86.

Per capita real GDP rose by 52 per cent from 1978 to 1986. Real GDP grew at a rate of about 8.8 per cent a year during this period, reflecting in part the oil sector's rising output.¹ Oil revenue also impacted positively on government budget, with oil revenue growing from 1.4 per cent of GDP and 9 per cent of total revenue in 1980 to 9 per cent of GDP and 41 per cent of total revenue in 1985. Total

government revenue increased from an average 17 per cent of GDP during 1965–77 to an average 21 per cent during 1978–86, accompanied by rising government outlays keeping the budget broadly in balance. Public investment was increased without much attention to economic returns. Thus government investment-to-GDP ratio increased from a meagre 2 per cent during 1965–77 to 9 per cent, on average, during the period 1978–86, while reducing current outlays from 16 per cent to 12 per cent of GDP, on average. The government embarked on setting up and/or expanding a large number of public enterprises, cash crop marketing boards and other public agencies (all of which quickly became money-losers) in all the sectors of the economy. Discipline in management of public expenditure was relaxed.

Decade of Economic Recession (1987–93)

This period was marked by a severe economic recession. Economic activity shrank in most sectors, particularly in construction and public works. The production of cash crops, retail trade and the petroleum sector also shrank significantly. Per capita real GDP dropped by almost 40 per cent. The deterioration in the country's economic and financial situation can be attributed to three main factors:

- (i) The deterioration of world prices of Cameroon's main export commodities (oil, cocoa and coffee). Between 1986 and 1998, the international prices of crude oil, cocoa, coffee and rubber (together representing almost 80 per cent of total exports during the period) dropped by 65, 24, 11 and 20 per cent, respectively, resulting in a 47 per cent deterioration in the global terms of trade;
- (ii) An appreciation of the country's real effective exchange rate by almost 40 per cent as a result of the depreciation of the US dollar (Cameroon's main exports payment currency); and
- (iii) A decline in oil output.

These factors impacted negatively on central government revenue, reducing it from 21 per cent to 15 per cent of GDP between the periods 1978–86 and 1987–93. The fiscal deficit averaged 7 per cent of GDP. The ensuing deficit was financed from two main sources: external borrowings and the accumulation of external arrears. As a consequence, external debt rose from 31 per cent in 1978–86 to 49 per cent of GDP in 1987–93. Huge stocks of arrears were accumulated to external creditors and to domestic suppliers as well. As government became unable to honour its financial commitments, several local companies had to halt work and default on their obligations to domestic banks on the one hand and on their tax obligations on the other. The deteriorating financial conditions at this time exposed the problems of several local banks, which were seriously undercapitalized and poorly managed.

To reverse the declining trends, the government adopted a strategy based mainly on internal adjustment measures by mainly reducing the fiscal deficit through increases in tax rates, cuts in the public wage bill² and subsidies to public enterprises. In addition,

trade liberalization was adopted, as part of a more outward-oriented development strategy. These strategies based on internal adjustment proved insufficient to put the country back on a sustainable economic recovery track, given the magnitude of the macroeconomic imbalances. As a result, central government revenue dwindled, accompanied by cuts in the investment budget, non-wage expenditure and other essential services (Amin 1998).

Decade of Return to Growth (1994–2002)

The ineffectiveness of the internal adjustment strategies led the government, in collaboration with other member countries of the CFA franc zone, to devalue its currency by 50 per cent in 1994. The government also initiated a comprehensive programme that consisted of internal adjustment measures and structural reforms, which included the reorganization and downsizing of the civil service, privatization of public enterprises, bank restructuring, and liberalization of domestic prices and interest rates. These measures helped restore the country's external competitiveness. Most cash crops exports (coffee, cocoa, cotton, timber) as well as manufacturing exports recorded strong gains. In addition, activity in domestic oriented industries started expanding in 1995.

Overall Revenue Trends and Composition of Tax Revenues

Since the 1960s, central government revenue has, in general, experienced an unstable trend. Total revenue increased steadily in the decade 1961–71 such that government revenue increased twofold from about 15 billion francs in 1961 to about 39 billion CFA francs in 1971. The decade 1972–82 was characterized by instances of spectacular rise in government revenue. Total revenue increased from 41 billion in 1972 to 362 billion in 1982, an increase boosted greatly by oil revenue.

Thereafter, the growth in government revenue registered a moderate rate of increase until the late 1980s, when the economic recession set in and impacted negatively on government revenue, thus reducing the latter substantially. As a percentage of GDP, total revenue has experienced a downward trend since 1963. In 1963–77, the share of total revenue to GDP was 16.6 per cent, which increased to 19.2 per cent in 1978–86. Thereafter, a sustained decline was observed. In 1987–93, the share dropped to 14.1 per cent, 11.7 per cent in 1994–96, and 15.3 per cent in 1997–2001. The share of tax revenue to GDP has observed a similar trend since the 1960s. In the period 1960–70, the ratio of tax revenue to GDP was 10.5 per cent, a figure that increased slightly to 12.1 per cent in 1970–74 and further increased to 16.12 per cent in 1975–85. But in 1986–93, the ratio was 13.98 per cent, and the downward trend continued to reach 13.94 per cent of GDP in 1994–2002. A large part of the decline in the tax ratio is attributable to both tax and non-tax revenue. Table 15.2 gives the ratio of major categories of taxes to total taxes (excluding social security contributions) for the period 1975–2002. This presentation enables us to focus on the patterns of taxation in Cameroon irrespective of levels of taxation.

Table 15.2: Structure of Cameroon's Tax-based Revenue Profile
(in Percent of Total Revenue)

Year	Total Revenue	Oil Revenue	Tax Revenue*	Taxes on Income & Profits	Taxes on Prod. & Inter. Tran.	Taxes on Trade	Foreign revenue
1975	100.00	/	78.24	11.58	29.47	37.19	6.18
1976	100.00	/	81.71	14.88	28.86	37.97	6.13
1977	100.00	/	82.89	12.40	33.21	37.28	3.74
1978	100.00	/	83.01	14.12	28.38	40.51	6.51
1979	100.00	28.64	61.24	15.58	23.23	22.43	2.94
1980	100.00	4.61	78.65	17.07	28.69	32.89	7.94
1981	100.00	9.71	72.91	18.46	25.02	29.43	11.20
1982	100.00	13.70	69.46	25.19	22.68	21.59	10.31
1983	100.00	36.37	45.79	17.30	14.18	14.31	3.12
1984	100.00	28.98	51.08	17.25	18.50	15.33	15.35
1985	100.00	57.46	66.22	24.69	23.70	17.75	11.53
1986	100.00	17.82	50.35	20.32	17.12	12.91	25.31
1987	100.00	10.83	56.94	19.97	22.06	14.91	25.36
1988	100.00	23.69	57.20	18.43	25.60	13.17	9.12
1989	100.00	26.59	61.90	18.63	31.76	11.51	5.08
1990	100.00	31.93	60.53	17.62	20.04	22.87	3.98
1991	100.00	40.30	52.66	13.69	18.84	20.13	3.42
1992	100.00	36.44	55.24	12.45	17.66	25.13	5.74
1993	100.00	25.86	80.24	10.92	36.11	33.21	10.48
1994	100.00	21.55	89.12	12.39	40.62	36.12	17.74
1995	100.00	20.11	71.95	10.86	41.57	19.51	10.30
1996	100.00	21.87	69.14	13.30	37.46	18.38	10.09
1997	100.00	27.38	65.37	13.56	34.63	17.18	1.34
1998	100.00	24.06	67.96	15.33	35.85	16.78	6.96
1999	100.00	17.18	84.33	22.48	43.93	17.92	7.62
2000	100.00	30.59	64.16	17.12	34.07	12.97	2.34
2001	100.00	33.66	61.79	16.91	33.51	11.37	3.47
2002	100.00	20.00	72.00	27.00	32.00	13.00	5.00

* excluding royalties on oil.

Source: author's calculations using data from various sources.

As Table 15.2 shows, indirect taxes were the most important source of government revenue, accounting for more than two-thirds, on average, of total government revenue in the 1975–82 period, with tax revenue from foreign trade taxes providing the bulk of this. The performance of foreign trade taxes was accounted for by the country's two main export commodities – cocoa and coffee – whose prices peaked in 1977. The share of these taxes in total revenue declined steadily, from 35 per cent on average in 1975–82 to 14 per cent in 1983–89. The decline was attributable to the fall in revenue from both import and export taxes. Import tax revenue declined

from an average of 24.3 per cent in 1975–82 to 11.3 per cent of total revenue in 1983–92. The main reason for this decline was the general deterioration of the economy in this period. Similarly, revenue from exports contributed insignificantly (2.7 per cent on average) to total revenue in the period 1982–89, as a result of the deterioration of world prices of the country's main export commodities (oil, coffee, cocoa etc.). In 1975 export duty contributed 11.9 per cent to total revenue, but this share declined to 1.9 per cent in 1986. It resumed growth in 1993–94, contributing some 15.8 per cent to total revenue in 1994. But in 2001 export duty contributed nothing at all to total revenue as a result of the complete removal of taxes on exports.

Taxes on production and internal transactions, which accounted, on average, for 27.4 per cent of government revenue in 1975–82, declined to 20 per cent, on average, during the recession decade (1983–92). The tax take resumed growth from 1993 following the devaluation of the CFA franc (in 1994) and the introduction of value-added tax (in 1999). On average, taxes on production and internal transactions contributed about 38 per cent to total government revenue in 1993–2001, making this category of taxes the single most important source of central government revenue. There has thus been a shift from international trade taxes to taxes on production and internal transactions. This trend lends support to the general impression that with the growth and diversification of their economies the developing countries, including Cameroon, have been turning more to the exploitation of internal taxes with diminishing relative reliance on international trade taxes.

The increase in the share of production taxes has been brought about both through more intensive use of excises and by the adoption of value-added tax (VAT). The relative shares of both taxes has generally increased between the periods 1986–93 and 1994–2002. Whereas the average share of excises has increased from 7 to 10 per cent of the total, the share of VAT tax has risen from 9 to 24 per cent of the total, reflecting heavy reliance on this tax instrument. The share of taxes from income is shown to have increased by 5 percentage points in the period 1975–2002. Revenue from income and taxes on profits increased steadily, from 11.6 per cent of total revenue in 1975 to 17.2 per cent in 1983, with big jumps in 1982 (25.2 per cent) and 1985 (24.7 per cent). Thereafter, the share of income and profit tax receipts fluctuated between 17 and 18 per cent until 1991 when the share began declining. In the period 1991–98, income tax receipts accounted for only 12.8 per cent of total revenue. In 1999, the share jumped to 22.4 per cent after which a downward trend ensued.

Over this period, the relative share of individual income tax receipts remained fairly stable, contributing, on average, some 9.5 per cent to total revenue. In contrast, the share of corporate profit tax receipts experienced an unstable trend. It contributed, on average, 5.1 per cent in the period 1975–81; 10.5 per cent in 1982–90; and a further 5.1 per cent in 1991–2001. Oil revenue contribution to total revenue displayed a similar trend. In the first year of its commercial production, receipts from oil accounted for over 28.6 per cent of total revenue; in 1985, just following the oil boom, oil receipts accounted for over half of total government revenue, contributing

57.5 per cent to total revenue. However, in 1986, the drastic fall in world prices of crude oil sharply reduced the share of oil revenue to 17.8 per cent in 1986 and 10.8 per cent in 1987. Thereafter, the trend reversed upwards, contributing the following shares to total revenue: over 40 per cent in 1991; 36 per cent in 1992; and 33.7 per cent in 2001.

The broad conclusions that emerge from the analysis of changes in the composition of tax revenues are that (i) the important change has been the increase in the share of production taxes over the years; (ii) the relative importance of international trade taxes has generally declined, a decline brought about through the decline in the share of import duties and the complete removal of taxes on exports; and (iii) the ratio of production taxes to GDP has increased irrespective of the direction of change in the overall tax ratio, whereas the ratio of income taxes and the overall tax ratio have generally changed in the same direction.

Variations in Tax Levels

Table 15.3 records the ratio of major categories of taxes and total taxes to GDP for the period 1975–2002. The taxes are grouped, following the lines of conventional classification, into direct and indirect taxes.

The major points arising from Table 15.3 can be summarized as follows:

- (i) the share of income taxes to GDP is not very significant. This form of taxation, on average, brought in less than 3 per cent of GDP in the period 1975–2002. But when oil revenues are included, the share of direct taxes to GDP becomes significant, contributing 6 per cent to GDP in the period 1975–2002. The share of oil revenue alone to GDP during this period is 4 per cent, making it an important source of central government revenue;
- (ii) the average ratios of taxes on production and internal transactions and of international trade taxes have been 4.5 and 3.5, respectively, over the period 1975–2002. Thus, indirect taxation has brought in almost 8 per cent of GDP in the last three decades;
- (iii) direct taxes excluding oil revenue bring in only a minor part of revenue in Cameroon, their average share being about 16 per cent over the period under study compared with about 30 per cent in other developing countries. The share of taxes from income has not shown any improvement over the last two to three decades. It is generally argued that with the growth of the economy and the rise in income the share of direct taxes, which are levied more in accordance with the individual's ability to contribute, would begin to rise. Such a transformation of the tax system in Cameroon is yet to arise where the share of income taxation would have been much lower were it not for the revenue coming from oil production;
- (iv) in contrast, indirect taxes bring in a significant part of revenue. Their average share has been 51 per cent of total central government revenue, supporting the conventional wisdom that developing countries rely heavily on indirect taxation because this yields large revenues and is easy to enforce.

**Table 15.3: Major Categories of Taxes
(Ratio to Gross Domestic Product)**

Year	(1) Income Taxes	(2) Oil Revenue	(3) = 1 + 2 Total Direct Taxes	(4) Taxes on Prod. & Inter. Tran.	(5) Taxes on Foreign Trade	(6) = 4 + 5 Total Indirect Taxes	(7) = 3 + 6 Total Taxes	8 Non-tax Revenue
1975	1.81	/	1.81	4.62	5.83	10.45	12.26	0.97
1976	2.48	/	2.48	4.81	6.33	11.14	13.62	1.02
1977	2.06	/	2.06	5.52	6.20	11.72	13.78	0.62
1978	2.61	/	2.61	5.24	7.48	12.72	15.33	1.20
1979	3.05	5.61	8.66	4.55	4.39	8.94	17.60	0.58
1980	2.90	0.78	3.68	4.88	5.60	10.48	14.16	1.35
1981	3.23	1.70	4.93	4.38	5.15	9.53	14.46	1.96
1982	4.53	2.46	6.99	4.08	3.88	7.96	14.95	1.85
1983	4.44	9.33	13.77	3.64	3.67	7.31	21.08	0.80
1984	4.30	7.21	11.51	4.61	3.82	8.43	19.94	3.82
1985	3.90	9.09	12.99	3.76	2.81	6.57	19.56	1.82
1986	4.54	3.98	8.52	3.82	2.88	6.70	15.22	5.65
1987	3.92	2.13	6.05	4.33	2.93	7.26	13.31	4.98
1988	3.26	4.19	7.45	4.53	2.33	6.86	14.31	1.61
1989	3.27	4.67	7.94	5.58	2.02	7.60	15.54	0.89
1990	2.40	4.36	6.76	2.73	3.12	5.85	12.61	0.54
1991	1.97	5.79	7.76	2.71	2.89	5.60	13.36	0.49
1992	1.83	5.36	7.19	2.60	3.69	6.29	13.48	0.84
1993	1.44	3.41	4.85	4.76	4.38	9.14	13.99	1.38
1994	1.13	1.96	3.09	3.69	3.28	6.97	10.06	1.61
1995	1.33	2.46	3.79	5.09	2.39	7.48	11.27	1.26
1996	1.80	2.95	4.75	5.06	2.48	7.54	12.29	1.36
1997	1.91	3.86	5.77	4.88	2.42	7.30	13.07	0.19
1998	2.32	3.64	5.96	5.42	2.54	7.96	13.92	1.05
1999	2.83	2.16	4.99	5.53	2.26	7.79	12.78	0.96
2000	2.84	5.07	7.91	5.65	2.15	7.80	15.71	0.39
2001	3.16	6.30	9.46	6.27	2.13	8.40	17.86	0.65
2002	4.00	5.10	9.10	6.90	2.50	9.40	18.50	0.90

Source: computed by author using data from many sources.

The shares of the major taxes in GDP have influenced the share of total taxes to GDP over the years. Table 15.4 gives the total tax ratios in the whole period 1960–2002 for Cameroon, as well as certain measures or indices of changes in the ratios over the years.

The marginal tax rate determines how much the tax ratio rises as national income increases over time. Thus, it gives an idea of the proportion of additional national product that the government has been able to divert to the public sector. For Cameroon, this proportion has changed little since the 1970s. In the period 1972–78, the government had, on average, taxed about 16 per cent of the additional income, while in 1979–85, it taxed only 13 per cent of additional income. This is the period when commercial oil exploitation started and thus the government concentrated

more on this sector and neglected others. The marginal tax rate increased to about 16 per cent in 1986–93 and to about 18 per cent in 1994–2002. The factors that contributed to this improvement since 1993 were the comprehensive economic and fiscal reforms undertaken by government.

Table 15.4: Ratios of T/GDP, Marginal Tax Rates and Income Elasticities of Tax Revenue

Years	Ratio of Tax Revenue to GDP ¹	Marginal Tax Rate ²	Income Elasticity of Total Tax Revenue ³
1960–70	10.5	na	na
1972–78	13.53	16.19	1.34
1979–85	12.22	13.13	1.12
1986–93	9.74	15.79	1.44
1994–2002	10.19	18.23	1.79

na: not available.

Source: computed by author using data from various sources.

¹ Relate to total taxes excluding social security contributions and oil royalties.

² Absolute change in tax revenue divided by absolute change in GDP.

³ Percentage change in tax revenue divided by percentage change in GDP. Our interest here is in the total relative increase in tax revenue.

Significant measures have been taken to broaden the tax base, to improve compliance and enforcement and also to reduce corruption in the tax administration. In addition, the introduction of value-added tax (VAT) in 1999 has contributed a great deal to the amount the government is able to tax from additional income. These measures also had an impact on the income elasticity of total tax revenue. The elasticities were above unity when the tax ratios to GDP were fairly low, especially in the periods 1986–93 and 1994–2002, reflecting deliberate discretionary effort on the part of the government to mobilize more revenue from taxes.

The method employed in this research consists essentially of identifying major factors that have influenced the level of taxation in Cameroon and in estimating their relative influences through regressions based on time series data for the period 1972–2002.

Data Sources

The data cover the period from 1972 to 2002. Data were obtained from secondary sources, mainly national and international statistical publications, including various issues of the *Government Finance Statistics Yearbook* of the IMF. The variables include central government total revenue and total expenditure, total tax revenue including data on individual taxes such as foreign trade taxes, income taxes (both individual and corporate), taxes on production including VAT and excise, and other taxes.

The data on GDP, imports and exports were taken from various issues of the IMF publication *International Financial Statistics*. Data on public external debt were taken from various issues of the World Bank publication *World Debt Tables*. Data on

agriculture and oil sector were obtained from various issues of the Cameroon Ministry of Finance and Budget publication *National Accounts and Statistics*. Data for the various taxes were also computed from various issues of the Ministry of Finance and Budget publication *Public Finance Statistics*. All figures are in CFA francs.

The Model

The model is derived from the review the literature. Hence our tax ratio function to be fitted to the empirical data is:

$$RTOTAX = F(PCGDP, AGRIC_y, (X_y + M_y), EXPORT_y, GEXPEND_y, EPDEBT_y, D1, D2, U) \quad (1)$$

where:

RTOTAX	= total tax ratio ³ to GDP
PCGDP	= per capita income
AGRIC _y	= agricultural income ratio (to GDP)
X _y + M _y	= trade ratio (to GDP)
EXPORT _y	= export ratio (to GDP)
GEXPEND _y	= central government total expenditure ratio (to GDP)
EPDEBT _y	= total external public debt ratio (to GDP)
D1	= dummy variable representing offshore oil discovery in 1978
D2	= dummy variable representing fiscal reforms from 1994
U	= error term, the catch-all residual.

The relationship is assumed to be linear; therefore the basic estimating equation is specified as follows:

$$RTOTAX = \beta_0 + \beta_1 PCGDP + \beta_2 AGRIC_y + \beta_3 (X_y + M_y) + \beta_4 EXPORT_y + \beta_5 GEXPEND_y + \beta_6 EPDEBT + \beta_7 D1 + \beta_8 D2 + U \quad (2)$$

$\beta_i, i = 1, 2, 3, 4, 5, 6, 7, 8$ are parameters to be estimated, and as per our hypotheses specified above, $\beta_i > 0$, for $i = 1, 3, 4, 5, 7, 8$; $\beta_i < 0$, for $i = 2, 6$. β_0 is the constant term.

Estimating the Model

The equations are estimated using ordinary least squares (OLS). The possibility of a bias in the coefficient estimates owing to simultaneity was tested by running the same equations with two-stage least squares (2SLS) on the data for the period 1972–2002. However, the estimates did not change significantly when the estimation procedure was varied, therefore OLS estimates are presented. The dependent variable, tax ratio, and the independent variables, except for per capita income, are ratios. Both the numerator and denominator of the ratios are measured in Cameroon's currency, the CFA franc.

Methodology

First, we estimated the partial effects of each of the proxy variables to the level of the tax ratio. We combined all the explanatory variables in a single equation and

estimated the effects of each variable on the level of tax ratio, holding the other explanatory variables constant.

With the method of the OLS using stepwise backward regression, four empirical tax ratio functions were calculated. The results are presented in Table 15.5.

Table 15.5: Regression Equations for Tax Levels in Cameroon

Dependent Variable RTOTAX	Equation 1	Equation 2	Equation 3	Equation 4
Explanatory Variables				
Constant	14.301* (3.032)	13.760* (3.586)	12.478* (4.794)	13.720* (5.905)
PCGDP	1.412* (4.805)	1.392* (5.110)	1.362* (5.236)	1.502* (6.716)
AGRICy	-1.660 (-0.206)			
TRADEy	-0.251* (-3.463)	-0.254* (-3.682)	-0.248* (-3.717)	-0.277* (-4.514)
EXPORTy	0.521* (6.260)	0.524* (6.585)	0.532* (6.953)	0.545* (7.186)
GEXPENDy	-5.530 (-0.496)	-4.580 (-0.461)		
EPDEBTy	-8.920* (-4.874)	-9.200* (-7.454)	-8.910* (-8.487)	-8.790* (-8.406)
D1	0.941 (0.883)	1.042 (1.124)	0.915 (1.050)	
R ²	0.808	0.808	0.806	0.798
Adjusted R ²	0.760	0.760	0.768	0.767
SSE	39.444	39.517	39.867	41.625
Durbin-Watson statistic	2.044	2.033	2.049	2.048

* Significant at the 1% level; t-ratios in parenthesis

Source: author's calculations.

The following observations can be made on the table:

- (i) Equation (1) relates the tax level to per capita income, the agricultural share, the foreign trade share, export share, government expenditure share, external public debt share, and dummy 1 share in GDP. This equation attributes 81 per cent of total variation in the tax ratio to these proxies. Only per capita income, the foreign trade share, export share and external public debt share are statistically significant at the 0.01 level. The agricultural share is insignificantly and negatively correlated with the tax ratio, not rejecting the null hypothesis. Similarly, the level of government expenditure falls short of statistical significance and exhibits a negative correlation with tax ratio, rejecting the null hypothesis. On the other hand, dummy 1 is statistically insignificant and positively correlated with the tax ratio. In this case the null hypothesis was not rejected.

- (ii) To see the effect of excluding the factor of agricultural share on the result of the regression equation, a new equation was fitted to the same empirical data. The coefficient of determination did not change. The reduced equation still attributed 81 per cent of total variation in the tax ratio to the proxy variables excluding agricultural share. Only the government expenditure share and dummy 1 were statistically insignificant but exhibited coefficients that were significantly different from zero. The variables exhibited the same signs as in equation (1).
- (iii) In equation (3) we excluded government expenditure variable and fitted a new equation to the same empirical data. Only dummy 1 variable was insignificant, exhibiting a positive correlation with the tax ratio. R^2 didn't change much. This equation attributes 80 per cent of the variation in the tax ratio. Per capita income, foreign trade share, export share and external public debt share were significant at the 0.01 level. Whereas per capita income and the export share were positively correlated with the tax ratio, the foreign trade share exhibited a negative correlation.
- (iv) Equation (4) relates the tax level to per capita income, trade share, export share and external debt share in GDP. This equation seemed to have the greatest statistical merit in terms of statistical significance and coefficient estimates as well. Even with the exclusion of four proxy variables from the model, the coefficient estimates have not changed radically. According to this specification, the proxies account for over 79 per cent of the variation in the tax ratio. Per capita income exhibited a strong positive correlation with the tax ratio. External public debt also exhibited a very strong but negative correlation with the tax ratio. On the other hand, the foreign trade ratio is significant but negatively related to the tax ratio whereas the export share exhibited a strong positive correlation with the tax ratio. Equation (4) yielded the best results and our fitted regression line is as follows:

$$RTOTAX = 13.720 + 1.502PCGDP - 0.277TRADE_y + 0.545EXPORT_y - 8.790EPDEBT_y \quad (4)$$

$$t\text{-ratios} \quad (5.905) \quad (6.716) \quad (-4.514) \quad (7.186) \quad (-8.406)$$

$$R^2 = 0.798$$

Descriptions of the Econometric Results

The finding that most clearly emerges from the foregoing analysis is that there is no significant relationship between the tax ratio and the share of agricultural income, which suggests little responsiveness of taxable capacity to relatively high levels of agricultural exports in the case of Cameroon.

On the one hand, the level of external public debt has proven to be a very important determinant of the tax ratio in Cameroon at its present stage of development. The negative coefficient of external debt indicates that if the level of

external public debt increases by 1 percentage point, the tax ratio decreases by 8.79 percentage points. On the other hand, per capita income is statistically significant in line with Lotz and Morss results. Hinrich (1966), in his study of tax revenue shares of many developed and developing countries, concluded that after a certain level of development (measured by the level of per capita income) is reached, in his study \$500 per capita income, a strong positive relationship exists between government revenue shares and per capita income. Our regression analysis confirms this finding.

The per capita income for Cameroon, on average, is about \$700 for the period under study. Our regression results suggest that a one million increase in per capita income is associated with an increase of 1.5 percentage points in the tax ratio. These results therefore, do not support the results of earlier studies, which revealed that per capita income is a non-significant determinant of the tax ratio in developing countries.

The openness factor measured by foreign trade failed to perform as well as expected, although was significant at the 0.01 level. It was expected that the trade ratio would be positively correlated with the share of revenue in GDP, but we found a negative correlation, therefore rejecting the null hypothesis. In contrast, the export ratio exhibited a positive correlation with the ratio.

Summary of Findings

The results obtained from our estimations shed light on the statistical relationship between tax share and a set of explanatory variables including per capita income, the level of external public debt, export share and foreign trade share. The introduction of two dummies, representing the two structural breaks that the country experienced in the period under study, fell short of statistical significance. As a result these dummies were dropped from the estimated model. It is interesting to observe that the comprehensive economic and fiscal reforms initiated by the government since 1994 fell short of having an impact on the level of taxation in Cameroon. Also, the non-significance of the effect of the discovery and subsequent production of oil was somewhat unexpected, because a causal analysis of developing countries had suggested that the share of mining in GDP is a major determinant of tax ratios in many developing countries.

Regarding per capita income and the openness factor, the conventional wisdom of tax ratio and tax effort analysis holds that the tax revenue share of GDP in developing countries is a function of the stage of development and the openness factor. Traditionally, the stage of development has been measured by per capita income – a larger per capita income suggests a greater taxable capacity. But in earlier studies the use of per capita income had not been effective in explaining the variance between developing countries. Our results prove the contrary. Per capita income showed a very strong positive correlation with the tax ratio. These findings lend some credence to the argument that lumping countries together and calculating their tax level or tax effort may hide important aspects about individual countries. In the same vein, the agricultural share, which in most former studies was found to be significantly and negatively correlated with the level of taxation in developing countries, repeatedly showed insignificant coefficients in all our estimating equations albeit

negatively correlated with the tax ratio. Openness as defined by exports as a share of GDP and foreign trade as a share of GDP did not perform as well as per capita income. The trade ratio was significant only when brought in with the export ratio. However, it exhibited a weak negative correlation with the tax ratio.

This relationship is unexpected as we had hypothesized a positive relationship between the foreign trade ratio and the tax ratio not only because earlier studies had postulated a positive relationship, but also because of the trade liberalization policy undertaken by the government. This policy has consisted mainly of the reduction and unification of tariffs on imports, export promotion and devaluation of the exchanged rate, accompanied by domestic tax reform. Under normal circumstances the above measures should increase revenue. According to the Laffer curve, if the initial tariff rate is prohibitively high, then tariff reductions necessarily increase revenue by reducing the incentive to evade taxes. Alternatively, if the initial tariff rate is below the revenue-maximizing rate, then the direct effect of a tariff reduction is loss of revenue. The indirect effects are difficult to assess, and this depends on the elasticity of substitution between imports and domestic import substitutes.

Trade liberalization necessarily has spillover effects on the ability to collect taxes elsewhere in the economy. With a decline in tariffs, the domestic production of non-tradables and exportables increases, as their relative prices are higher. Income taxes on the income derived from the production of non-tradables and exportables should now increase. Conventional wisdom holds that large volumes of imports of goods are made possible through large volumes of exports. In part, these relations reflect the accessibility to taxation of different kinds of income and consumption and the administrative feasibility of reaching them. The negative relationship we obtained between the foreign trade share and the tax ratio is therefore indicative of failure of the trade liberalization policy to produce the desired effects in Cameroon.

The trade liberalization policy in Cameroon also involved the reduction and complete removal of export taxes. It is often argued that if export taxes significantly change the volume of exports, their reduction should increase export revenues, or it should reduce export revenues. The positive relationship we obtained between export share and tax ratio lends credence to the assertion that tax-free exports increase the volume of exports, which should lead to increases in revenues, hence the significant and positive correlation exhibited by the export variable with the tax ratio. Finally, the superiority of the external public debt variable in our model necessitates an analysis of its effect on the economy of Cameroon.

Since the 1970s, Cameroon's external debt has been growing and the burden of repayment has been weighing heavily on the country's economy. The high economic growth rate (about 8 per cent) Cameroon enjoyed during this period might have been partly accounted for by external loans. These loans coupled with cash export earnings enabled the government to reach a level of expenditure that did not readily correspond to the volume of its current revenue. As the revenue situation worsened, instead of devising ways of generating resources internally, the government resorted to more borrowing as long as it was available. Government's borrowing pattern did

not change even after the economic recession set in around the mid-1980s. During this same period, the repayment dates for the loans were increasing back payments and further multiplying the debt burden. In 1995/96, for example, the ratio of debt servicing to total revenue was 84.8 per cent. This ratio fell slightly to 73.8 per cent in 1996/97. The downward trend in savings had a negative effect on investments as well.

External debt can affect investments in three different ways. First, debt servicing involves transfer of funds, which results in a reduction of resources available for investments if other external funding is insufficient and its consumption is low. Second, the anticipated 'tax' that the future servicing of the debt implies reduces the expected returns from investments. Third, the uncertainty as to the measures to be taken to ensure debt servicing, which is uncertain, tends also to discourage investment. Therefore, in a situation of excessive indebtedness, returns from all investments would be more likely, at least in part, to go to creditors rather than to the country per se, and consequently this would not add to the total consumption in the country.

Concluding Observations

There are three general findings of our results. First, the level of taxation responds to changes originating in the level of income. Second, the level of indebtedness of the government has impacted negatively on the potential for government to mobilize adequate revenue from domestic sources. And third, foreign trade share had a negative effect on the tax level whereas the export share positively impacted on the tax revenue share. In sum, our model underscores the importance of the level of external public debt in explaining the variance in tax level in Cameroon. It is suggested that the government of Cameroon should look for alternative ways of raising revenue from domestic sources rather than from foreign sources.

Mobilization of Additional Revenue

The tax reform measures (both tax and customs reforms) introduced in the 1994–2002 period have succeeded in improving revenue generation and in enhancing to some degree the efficiency of the tax administration. The tax base has been greatly broadened and the whole structure of taxation rationalized. Yet the government current revenue as a proportion of GDP is still too low compared with the average obtained in Africa and even with the average obtained in CEMAC; this suggests the possibility for Cameroon, a developing country, to raise its tax revenue to a level of 23 per cent as in other CEMAC countries.

Cameroon's GDP accounts for 50 per cent of the total GDP of the region and it is one of the most important members of the Community in terms of its economic potential compared with the other member countries. Various revenue enhancement options are found to be available for use by the tax authorities. These include the rationalization of VAT, revaluing properties to broaden the base of property taxation, and further improving the tax and customs administrations to improve tax collection and combat evasion, avoidance and fraud.

Policy Implications of our Findings

Economists have been asserting that the inability of many developing countries' governments to raise more resources internally is a result of poverty and that government revenue shares in developing countries are inadequate. But the method by which they can be increased is not so obvious. Particular tax devices that work successfully in one country may not be appropriate in another. The ability to raise revenue is determined by the availability of large concentrations of wealth and the existence of a number of channels through which economic transactions are made. Hence, when the economy develops, government revenues will increase because there will be more opportunities to levy taxes effectively.

In the case of Cameroon, from our analysis we postulate three fronts along which the government can improve its revenue mobilization without necessarily overburdening the economy. These include: rationalization of taxation on production and internal transactions, improving the implementation of tax laws, and further strengthening the tax administration. Where existing taxes do not cover the entire range of economic activity, the tax base should be broadened, with the coverage of existing taxes expanded. Since its introduction in 1999, VAT has become a major source of revenue in Cameroon. VAT represents more than 66 per cent of the taxes on production and internal transactions. However, VAT, as a percentage of GDP, was only 4.58 per cent in 2002, a low figure when compared with that in comparable VAT regimes elsewhere. The base of VAT is broader, the number of rates have been reduced to a standard rate of 18.7 per cent and a zero rate for exports. Excessive exemptions complicate administration. We therefore recommend that the exhaustiveness of the VAT be intensified by increasing its yield through reduced exemptions. The neutrality of the tax would be improved if the coverage of services were broadened and if exemptions were replaced by zero ratings.

The tax laws in Cameroon are well designed, but effective implementation falls short of expectations. Most observers agree that even without any substantial change in policy, tax revenues could be increased significantly by strengthening implementation. In sum, the mobilization of additional revenue does not necessarily need to come from the introduction of a new tax. It takes political will, determination and seriousness on the part of government authorities to succeed in mobilizing adequate revenue from domestic sources without resorting to external borrowing.

Notes

1. Oil production increased from less than 5 million barrels in 1978 to more than 66 million barrels in 1986.
2. From December 1992 to December 1995 real wages of civil servants fell by 75–80 per cent.
3. In this model the term 'tax ratio' is used to mean the ratio of all taxes including royalties on oil (excluding social security contributions) to GDP at current market prices.

References

- Agbor, Dorothy Nkogho, 2004, 'An Empirical Investigation of Determinants of the Level of Taxation in Cameroon', MA Thesis, Tokyo: Keio University.
- Alison, Martin and W.A. Lewis, 1956, 'Patterns of Public Revenue and Expenditure', *Manchester School of Economic and Social Studies*, Vol. 24, No. 9, pp. 203–44.
- Amin, Aloysius Ajab, 1998, *Cameroon's Fiscal Policy and Economic Growth*, AERC Research Paper No. 85, Nairobi: AERC.
- Amin, Aloysius Ajab, 2000, *Equity, Microeconomic and Efficiency Effects of Revenue Policy in Africa*, paper presented at Fourth AERC Senior Policy Seminar, Gaborone, Botswana, February.
- Bahl, Roy W., 1971a, 'A Regression Approach to Tax Effort and Tax Ratio Analysis', *IMF Staff Papers*, Vol. 18, No. 3, pp. 570–612.
- Bahl, Roy W., 1971b, 1972, 'A Representative Tax System Approach to Measuring Tax Effort in Developing Countries', *IMF Staff Papers*, Vol. 19, No. 1, pp. 87–124.
- Bartley, Hildreth and James A. Richardson, eds., 1999, *Handbook on Taxation*, New York and Basel: Marcel Dekker, Inc.
- Bird, Richard and Oliver Oldman, eds, 1975, *Readings on Taxation in Developing Countries*, Baltimore and London: Johns Hopkins University Press.
- Bird, Richard and Oliver Oldman, eds., 1990, *Taxation in Developing Countries*, Baltimore and London: The John Hopkins University Press.
- Chelliah, Raja J., 1971, 'Trends in Taxation in Developing Countries', *IMF Staff Papers*, Vol. 18, No. 2, pp. 255–331.
- Chelliah, Raja J., Hessel J. Baas and Margaret R. Kelly, 1975, 'Tax Ratios and Tax Effort in Developing Countries', *IMF Staff Papers*, Vol. 22, No. 1, pp. 187–205.
- Deutsch, Karl W., 1961, 'Social Mobilization and Political Development', *American Political Science Review*, Vol. 55, No. 3, pp. 493–514.
- Ghura, D., 1997, *Private Investment and Endogenous Growth: Evidence from Cameroon*, IMF Working Paper, WP/97/165, Washington, DC: IMF.
- Griffiths, William, Hill Carter and Judge George, 1997, *Undergraduate Econometrics*, New York: John Wiley.
- Gujarati, Damodar N., 1995, *Basic Econometrics*, New York: McGraw-Hill.
- Hinrichs, Harley H., 1965, 'Determinants of Government Revenue Shares Among Less-Developed Countries', *Economic Journal*, Vol. 75, No. 299, pp. 546–56.
- Hinrichs, Harley H., 1966, *A General Theory of Tax Structure Change During Economic Development*, Cambridge, MA: Harvard Law School.
- Leuthold, Jane H., 1991, 'Tax Shares in Developing Countries: A Panel Study', *Journal of Development Economics*, Vol. 35, No. 1, pp. 173–85.
- Lotz, Joergen R. and Elliot R. Morss, 1967, 'Measuring Tax Effort in Developing Countries', *IMF Staff Papers*, Vol. 14, No. 1, pp. 478–99.
- Lotz, Joergen R. and Elliot R. Morss, 1970, 'A Theory of Tax Level Determinants for Developing Countries', *Economic Development and Cultural Change*, Vol. 18, No. 3, pp. 328–41.
- Maddala, G.S., 2001, *Introduction to Econometrics*, New York: John Wiley.
- Musgrave, Richard A., 1969, *Fiscal Systems*, New Haven: Yale University Press.
- Musgrave, Richard A., 1987, 'Tax Reform in Developing Countries'. In: D. Newbery and N.H. Stern, eds, *The Theory of Taxation for Developing Countries*, New York: Oxford University Press.

- Musgrave, Richard A. and Peggy B. Musgrave, 1973, *Public Finance in Theory and Practice*, New York: McGraw-Hill.
- Oshima, H.T., 1957, 'Share of Government in Gross National Product for Various Countries', *American Economic Review*, Vol. 47, No. 3, pp. 381–90.
- Pindyck, Robert S. and Daniel L. Rubinfeld, 1991, *Econometric Models and Economic Forecasts*, New York: McGraw-Hill.
- Prest, A., 1978, 'The Taxable Capacity of a Country'. In: J.F. Toye, ed., *Taxation and Economic Development*, London: Frank Cass.
- Radian, Alex, 1980, *Resource Mobilization in Poor Countries: Implementing Tax Policies*, New Brunswick, NJ and London: Transaction Books.
- Shin, Kilman, 1969, 'International Difference in Tax Ratio', *The Review of Economics and Statistics*, Vol. 51, No. 1, pp. 213–20.
- Stephen, Lewis R. Jr, 1963, 'Government Revenue from Foreign Trade: An International Comparison', *Manchester School of Economic and Social Science*, Vol. 31, No. 1, pp. 39–45.
- Tait, Alan A., Barry J. Eichengreen and Wilfrid L.M. Gratz, 1979, 'International Comparisons of Taxation for Selected Developing Countries, 1971-76', *IMF Staff Papers*, Vol. 26, No. 1, pp. 123–56.
- Tamba, I. et al., 2001, *Cameroon: Stakes and Challenges of the HIPC Initiative*, Yaoundé: Presses Universitaires d'Afrique.
- Tanzi, Vito, 1987, 'Quantitative Characteristics of the Tax Systems of Developing Countries'. In: D. Newbery and N.H. Stern, eds, *The Theory of Taxation for Developing Countries*, New York: Oxford University Press, pp. 205–41.
- Tanzi, Vito, 1991, *Public Finance in Developing Countries*, Brookfield, VT and Aldershot (UK): Edward Elgar.
- Thorn, Richard S., 1967, 'The Evolution of Public Finances During Economic Development', *Manchester School of Economic and Social Studies*, Vol. 35, No. 1, pp. 19–53.
- U. Tun Wai, 1962, 'Taxation Problems and Policies of Under-developed Countries', *IMF Staff Papers*, Vol. 9, No. 3, pp. 428–47.
- Weiss, Steven J., 1969, 'Factors Affecting Government Revenues Share in Less Developed Countries', *University of West Indies, School of Social and Economic Studies*, Vol. 18, pp. 348–64.
- Williamson, Jeffery G., 1961, 'Public Expenditure and Revenue: An International Comparison', *Manchester School of Economic and Social Studies*, Vol. 29, No. 1, pp. 43–56.
- World Bank: official home page: <http://www.worldbank.org>.

Real Exchange Rate Misalignment in Cameroon, 1970–1996

Francis M. Baye and Sunday A. Khan

Introduction

Structural adjustment programmes sponsored by the IMF/World Bank were adopted by many African (SSA) countries in the 1980s. The main objective of these programmes was to revamp the incentive base of these economies with a view to increasing especially agricultural production and export – agriculture being the largest production and employment sector in these economies, and equally an important foreign exchange earner. In the adjustment programmes, exchange rate reforms took centre stage. This is because there is general agreement that the exchange rate plays a crucial role in the stabilization and adjustment process (Aghevli and Montiel 1991; Edwards 1990; Elbadawi 1992). In most African countries, therefore, the exchange rate has become a considerable policy instrument. This is particularly important to most of these countries because they produce and export primary products and need to be competitive on the international market.

African Franc Zone countries, however, do not have the opportunity to unilaterally change the nominal exchange rate for economic policy objectives. Their currency (the CFA Franc) is institutionally pegged to the French Franc (FF) and through the FF to the Euro. The nominal exchange rate is therefore exogenous to them and does not constitute a policy instrument to an individual member. The change in parity between the FF and the CFAF can occur only by unanimous agreement of member countries and France. Being a member of the Franc Zone, Cameroon cannot use its nominal exchange rate (NER) as a policy instrument. But changes in the NER would affect the RER. It should be noted, however, that what influences international competitiveness is the real exchange rate and not the nominal exchange rate.

The real exchange rate is an expression of the total macroeconomic environment and is a critical variable for developing countries to monitor and manage properly through fiscal, income and other policies if they are to avoid distorting relative production incentives between tradable and non-tradable goods (Bautista and Val-

dés 1993). In particular, the real exchange rate is the nerve centre of the economy, which transmits the effects of domestic macroeconomic policies and external factors to the tradable goods sector. A departure of the real exchange rate from its equilibrium path is believed to negatively affect the incentive structure of the production base of the economy. The issue now is whether Cameroon can influence its real exchange rate given that it cannot use its nominal exchange rate as a policy option.

The main objective of this chapter is therefore to provide an empirical basis for the analysis of real exchange rate misalignment in Cameroon. This is decomposed into three specific objectives, which are to: (i) specify and estimate a real exchange rate equation for Cameroon, (ii) simulate the path of equilibrium real exchange rate (ERER), and (iii) compute the degree of real exchange rate misalignment. These objectives are motivated by the view that although Cameroon does not use its nominal exchange rate as a policy option, it can still influence its real exchange via other macroeconomic variables.

The remainder of the chapter is in five sections, which in turn discuss the exchange rate arrangements in the Franc Zone, present a literature review on the real exchange rate, outline the methodology of the study, report the results and submit concluding remarks.

Exchange Rate Arrangements in the Franc Zone

Cameroon is a member of the Franc Zone (FZ) whose currency, the CFA Franc, has been pegged to the French Franc since 1948. This zone is made of two regional Central Banks, the BEAC and BCEAO.¹ Member countries maintained a fixed parity between the CFA Franc and the French Franc (FF) of CFAF50 to the FF until 12 January 1994 when this was devalued to CFAF100 to the FF following a unanimous decision of the FZ member countries and France. Apart from the fixed parity between the two currencies, this zone is governed by a number of principles (M'Bet and Niamkey 1993), including free transferability of currency among members of the BEAC or BCEAO zones (transfer between zones was restricted in 1993). The reserves of the zone are pooled together and members use a common foreign exchange policy against the rest of the world. There is equally full convertibility of the CFAF to the FF through the *Compte d'Operation* kept at the French Treasury in which at least two-thirds of all foreign reserve earnings of member countries are held.

These principles have far-reaching implications for the economies of each of the member states. There is an absence of not only an independent exchange rate policy, but also no independent monetary policy as a whole. In the case of Cameroon, monetary policy decisions are taken at the level of BEAC and implemented by the national branch. BEAC and BCEAO work in close collaboration with France whose approval is necessary before major decisions are taken. BEAC is independent of national governments. This facilitates the control of inflation in the region though this might be at the cost of output and employment objectives pursued by the individual governments. Direct credits to a government by the Central Bank cannot

exceed 20 per cent of the previous year's fiscal revenues. This helps to prevent member states from monetizing their deficits with inflationary consequences. The fact that member countries are obliged to hold at least two-thirds of their reserves in the *Compte d'Operation* is quite constraining, but this is the price to be paid for the full convertibility of the CFAF into the FF. As a group, the FZ countries appear to have benefited from the discipline imposed by the need to coordinate monetary policies with partner states.

The need for coordinating monetary policies, however, imposes constraints on individual member countries. Some policies, such as monetary growth and nominal exchange rate changes, must be coordinated. This puts a great burden on other policy instruments for maintaining balance of payments (BOP) and RER equilibrium, particularly in terms of fiscal and wage policies.

In Cameroon, and perhaps in other FZ countries in the 1970s and 1980s, government expenditure and development programmes were extended. Salary increments were very frequent and workers developed an expectant attitude to wage increases, especially during each end-of-year presidential address to the nation. The wage increments enhanced the volume of purchasing power in the hands of the general public. Construction activities expanded, pulling manpower from rural areas. Illegal activities like smuggling of goods became attractive, given the high tariffs that were loaded on imports. Producers of traditional agricultural exports were heavily taxed. All these developments conspired to expand the non-tradable sectors of the economy by absorbing resources from the tradable sector. This is believed to have severely appreciated the RER and reduced the productivity and competitiveness of the export sector from the close of the 1980s.

Until 1986, real gross domestic product (GDP) growth was maintained at reasonable although not outstanding rates. In comparison to the rest of Sub-Saharan Africa, which grew slowly, the FZ performance appeared good. When compared with their West Africa neighbours such as Ghana and Nigeria, it was apparent that membership of the FZ was beneficial. From 1987, however, real output fell by 2 per cent and subsequent estimates were far more discouraging (Baye 1995). The decline in output and economic activity in the FZ was attributable to both an adverse international environment and the accumulated effects of poor domestic economic management.

By the latter half of the 1980s, there was a noticeable drain of CFA Franc notes from the FZ. The CFAF being a convertible currency became attractive to businessmen in the FZ neighbourhood. They used it as a store of value as well as to import goods from France and beyond to their countries. Some of the imported goods were subsequently smuggled into the economies of the FZ. These chronic liquidity shortages in the FZ among other external factors led the two Central Banks on 2 August 1993 to suspend the repurchase of the CFA notes exported out of the zone. This was followed barely five months later by a 50 per cent devaluation of the CFA Franc on 12 January 1994.

The crisis in the CFA countries in the 1980s and early 1990s was, at least in part, blamed on the severely overvalued RER. This was believed to have eroded the profitability of producing tradable goods and aggravated both financial and economic imbalances and long-standing structural problems (Devarajan and Hinkle 1994). It is therefore necessary to evaluate the validity of these assertions.

Literature Review on the Real Exchange Rate

Theoretical Review

Much has been written in the literature about the merits and demerits of adopting a fixed or a flexible exchange rate (e.g. Elbadawi and Soto 1997; Dordunoo and Njinkeu 1997). What is important, however, is not only the exchange rate regime, but more essentially the manner in which the other macroeconomic policy variables are managed and their effect on the real exchange rate.

Theoretically, the real exchange rate measures the real domestic terms of trade between traded and non-tradable goods (Edwards 1988). Thus, it is interpreted as the ratio of the prices of tradables to the prices of non-tradables (P_T/P_N). An operational definition uses the weighted wholesale price index (WPI) of principal trading partners or the weighted export and import price indices, and the consumer price index (CPI) or the GDP deflator for P_T and P_N , respectively (Dorosh 1993; Edwards 1989; Elbadawi and Soto 1997; Saudoulet and Janvry 1995). In this specification, the RER measures the relative purchasing power of the country's currency. When the RER declines (or appreciates), the prices of tradable goods fall in relation to the prices of non-tradables, and the reverse when the rate depreciates. To the extent that inter-sectoral resource flows are sensitive to changes in relative prices, changes in the real exchange rate can be expected to affect inter-sectoral profitability and thereby induce the movement of resources between different sectors of the economy. In particular, an appreciation of the real exchange rate would divert resources away from tradables to non-tradables, while a depreciation will have an opposite effect. In other words, a decline in the RER suggests that non-tradable goods were increasingly protected in comparison with tradable goods, and that exportables were becoming cheaper than non-tradables for domestic consumers and less profitable for producers.

Before assessing the level of RER distortion (misalignment) it is necessary to determine the equilibrium real exchange rate (ERER). Edwards (1989) defines the ERER as that relative price of tradables to non-tradables, which, for given sustainable (equilibrium) values of other relevant variables – such as trade taxes, international prices, capital and aid flows, and technology – results in the simultaneous attainment of internal and external equilibrium. Many approaches are proposed in the literature for measuring the equilibrium real exchange rate (ERER) and RER misalignment.

One of these is the purchasing power parity (PPP) concept. It associates the ERER with the value of the real exchange rate in a period of external balance (known as the base year), adjusted for inter-country differences in inflation rates.

RER misalignment is then obtained as the difference between RER and ERER. Operationally, there are a number of difficulties with this approach. The first problem is that of identifying the base year when the current account was in equilibrium. Secondly, under the PPP approach, the ERER is a constant that does not change. These shortcomings have led to the PPP concept being considered inadequate and misleading (Williamson 1997:26). In this light, Elbadawi and Soto (1997:76) conclude that 'given the available empirical evidence, (associated with both traditional and more recent cointegration econometrics), the PPP concept is not an option to modelling RER, despite its intuitive appeal and simplicity'.

Another way of measuring the ERER discussed in the literature is the elasticity approach (Krueger et al. 1988; Saudoulet and Janvry 1995). This estimates the ERER that will equilibrate the balance of trade. Here the ERER is defined as the rate for which the market is in equilibrium or at an acceptable or sustainable level of disequilibrium. One of the difficulties of this approach is the subjective way in which the sustainable level is determined. Another problem is the determination of import and export elasticities, since imports and exports are aggregates of many different products with very different price elasticities, and the measurement of such average elasticities is not clear.

A third approach based on an extension of the Salter–Swan model is the DLR² method proposed by Devarajan et al. (1993) and applied to CFA Zone countries by Devarajan (1997). The DLR approach divides the economy into three goods: exports, imports and domestic goods. In this approach, the ERER is that RER which is consistent with a particular current account target, given changes in import and export prices, and terms of trade shocks. This approach is very appealing as it allows a quick calculation of RER misalignment and is equally very parsimonious in its use of data. But it has the shortcoming of relying on the personal judgement of the researcher to determine the base year (as in the PPP approach) and the estimation of the elasticities of transformation and substitution used in this method. The latter depends on a good knowledge of the economy under study.

The approach we adopt in this chapter is the fundamentals approach (Edwards 1989; Williamson 1994; Elbadawi and Soto 1997; Ghura and Grennes 1994), which models the evolution of the RER as a function of the fundamentals (terms of trade, government consumption, capital flows, etc.) of the economy. It estimates the responsiveness of the RER to changes in these fundamentals. The ERER is obtained by retaining only the sustainable (or permanent) components of shocks to the fundamentals. Transitory components are discarded as ERER is attributed to short-to medium-run shocks that are not part of the fundamentals. A shortcoming is that the data requirements are substantial as compared with the DLR approach mentioned above.

Empirical Review

According to Williamson (1994), the inadequacies of African exchange rate policies have for some years been one of the stumbling blocks to the continent's progress.

The validity of statements like this attracted much interest in exchange rate issues in Africa in the latter half of the 1980s and the 1990s. Many studies have been conducted to understand and explain the role of the exchange rate in these economies (Edwards 1988; Elbadawi 1992; Elbadawi and Soto 1997; Cottani et al. 1990; Khan and Ostry 1991; Parikh 1997 and many others). The interest was further increased as international donors targeted the exchange rate as one of the key instruments in the structural adjustment programmes of many African countries. As an economic-wide relative price signalling for inter-sectoral resource transfers, the RER concept has assumed a central position in debates on economic development and growth strategies (Elbadawi and Soto 1997).

A number of these studies have focused on RER determination, and on how RER misalignment and RER volatility affect the economy as a whole or particular sectors or sub-sectors. It is in this regard that Ghura and Grennes (1994) examine the impact of RER misalignment on macroeconomic performance in Sub-Saharan Africa. Dordunoo and Njinkeu (1997) for their part look at the impact of exchange rate regime choice on macroeconomic performance and conclude that regime management is more important than regime choice. Ogun (1998) examines the effect of RER volatility and misalignment on export performance in Nigeria and affirms that they negatively affect export growth. Devarajan (1997) studies the misalignment of the RER in twelve CFA countries prior to and following the 1994 devaluation. He finds that the RER was highly overvalued in most of these countries before the devaluation, and remained overvalued in a number of countries (especially Cameroon) immediately after the devaluation. But there were huge differences in the degree of misalignment among the countries.

As concerns Cameroon, little quantitative work concerning the role of the RER in the economy has been carried out, despite the vital role it is believed to play as an expression of the overall macroeconomic environment of the country. However, Amin (1996) and Amin and Awung (1997) were among the first to empirically address the role of RER in Cameroon. In particular, Amin and Awung (1997) set out to evaluate determinants of real exchange rate, to simulate the path of the equilibrium real exchange rate, and to evaluate the degree of its misalignment. Using the co-integration methodology, they found that the explanatory variables have only a short-run impact on the real exchange rate. The main problem with their paper is that they failed to explicitly identify the path of the equilibrium real exchange rate. This led to the use of the PPP framework, which they themselves criticized. One of our objectives is to address these issues within a more systematic framework.

Methodology of the Study

RER Determination

The theoretical definition of the RER (that is, P_T/P_N) is not quite operational; the main difficulty is how to establish the price of non-tradables. Non-tradable goods constitute a large group of heterogeneous consumer and producer goods, or services

that tend to be close substitutes for some tradable goods in consumption or production, or have large components associated with tradable goods, respectively. Against this background, we have to resort to a more operational approach.

The GDP deflator is assumed to be a proxy for the price of home goods³ – a reasonable assumption if home goods weigh heavily in this deflator. Again, if it were presumed that the price of traded goods moves broadly in line with foreign prices, then the real exchange rate operational becomes the nominal exchange rate (NER) corrected for the ratio of the weighted average of import and export prices to the GDP deflator. This is given as:

$$RER = \frac{NER \cdot (P_x^w)^\beta (P_m^w)^{1-\beta}}{GDPdef} = \frac{(P_x)^\beta (P_m)^{1-\beta}}{GDPdef} \quad (1)$$

where:

NER = nominal exchange rate

P_x^w = international prices of export

P_m^w = international prices of import

P_x = index of domestic prices of export

P_m = index of domestic prices of import

GDPdef = GDP deflator a proxy for non-tradables.

Both structural factors and short-run factors may trigger changes in the RER. The structural factors or RER fundamentals would include: terms of trade; capital flows; government consumption, and trade and marketing policies. The short-run factors would include: the nominal exchange rates, and fiscal and monetary policies. The indication is that the RER prevailing at any point in time is determined by both structural and short-run factors. The RER will thus change regardless of the exchange rate regime chosen (Krumm 1993; Obadan 1994; Saudoulet and Janvry 1995).

Long-Run Equilibrium Real Exchange Rate (ERER)

Following the lead of Edwards (1989) and Ghura and Grennes (1994), ERER is determined mainly by real variables. Adopting a log-log functional form, the long-run equilibrium RER equation can be written as:

$$\log(ERER)_t = \alpha_0 + \alpha_1 \log(TOT)_t + \alpha_2 \log(OPEN)_t + \alpha_3 \log(GC/GDP)_t + \alpha_4 \log(FD/GDP)_t + \alpha_5 TP + \varepsilon_t \quad (2)$$

where:

GDP = gross domestic product

TOT = the terms of trade (i.e. price of exports over price of imports)

OPEN = openness, a proxy for trade policy measured as exports plus imports as a ratio of GDP

GC = government consumption

FD = long-term foreign debt

TP = technical progress, proxied by the growth rate of the GDP.

The TOT effect on the RER operates through import and export price variations. As the world prices of exports increase (that is, terms of trade improve), other things remaining equal, the supply of foreign exchange increases. Under a floating exchange rate regime, the supply curve of foreign exchange shifts to the right, leading to an appreciation of the RER. In a fixed exchange rate regime, the increased supply of foreign exchange leads to an expansion of the money supply and an increase in the general price level. This makes the RER appreciate. A change in the foreign price of imports, on the other hand, may cause the demand curve for foreign exchange to increase or decrease, depending on the elasticities of demand. Hence the RER may depreciate or appreciate.

The relationship between RER and TOT depends on the weight of the income and substitution effects. If the income effect dominates, an improvement in TOT translates into an increase in the demand for both tradables and non-tradables. While the prices of tradables are quoted in the world market, non-tradable prices would rise in response to the increased demand. Hence the RER will appreciate. If the substitution effect dominates, then the effect of the TOT will work in the opposite direction by lowering the domestic cost of imported inputs in the production of non-tradable goods, and TOT will attract a positive coefficient. But usually the income effect of TOT improvement dominates the substitution effect (Edwards 1989; Aron et al. 1997).

Trade liberalization or the openness of the economy (OPEN) is characterized by a reduction or elimination of export taxes and import tariffs, and hence an increase in the volume of trade. An elimination of import tariffs, for example, allows importers to buy more foreign exchange for the same level of total expenditure. The RER will rise in a fixed exchange rate regime, but this situation arises because domestic monetary contraction causes the general price level to fall. On the other hand, a reduction or elimination of export duties reduces the outlay required for a given quantity of exports. Exports become more attractive so that the supply curve shifts to the right. Consequently, the RER appreciates. If the exchange rate regime is fixed, the conversion of more foreign exchange into the domestic currency leads to the expansion of money supply. The price level rises and the RER falls (appreciates). The import tariffs and export taxes account for only explicit commercial policy, but implicit commercial policy has also been important both in Cameroon and Ghana. This includes the use of exchange controls, quotas and import licences. We proxy OPEN by the sum of exports and imports divided by GDP. This ratio takes care of both implicit and explicit commercial policy (Elbadawi and Soto 1997).

The RER is also affected by government consumption (GC). But the effect depends on the distribution of government expenditure between tradables and non-tradables. If government spends more on non-tradable than tradable goods (as is often the case), then we expect an appreciation of the RER as the prices of non-tradables will tend to increase.

Another source of an imbalance in the external accounts is foreign borrowing, leading to an increasing ratio of foreign debt (FD) to GDP, which can result in an

appreciation of the real exchange rate. This inflow of foreign exchange occurs mainly to the government rather than the private sector, and hence is likely to be spent more on non-tradables. Spending on non-tradable goods (both agricultural and non-agricultural) invariably leads to a relative increase in the prices of these goods and a decline in the RER.

Technological progress (TP) increases productivity and helps to lower the prices of tradable goods and may appreciate the RER. This appreciation is achieved by making exports more competitive owing to their relatively low prices and improved quality. This effect has been coined in the literature the 'Ricardo–Balassa effect'. Following Edwards (1989), and Ghura and Grennes (1994), the effect of technical progress is captured by the real GDP growth rate. As pointed out by Bergstrand (1991), technical change may also increase the demand for non-tradables through a real income effect.

Since the EREER is not directly observable, to reach it, we invoke the main features of the Edwards (1989) theoretical model of the equilibrium RER. These dimensions are captured by the following dynamic structure:

$$\log(RER)_t - \log(RER)_{t-1} = \lambda[\log(ERER)_t - \log(RER)_{t-1}] + \log(Z)_t \quad (3)$$

where Z is a vector of unsustainable macroeconomic policies, which tend to introduce short-run deviations between RER and EREER. The right-hand side of equation (3) has two components. The first is a partial adjustment term, which indicates that given enough time, actual RER will tend to adjust to its equilibrium path irrespective of the policies implemented. The second term relates to monetary determinants that are instrumental in placing a wedge between RER and EREER. Candidates in the vector Z may be expressed as:

$$\log(Z)_t = a_6 \log(NER)_t + a_7 \log(CREDIT/GDP)_t + a_8 (EXCR)_t \quad (4)$$

where:

NER = nominal exchange rate

CREDIT = domestic credit, and

EXCR = an index of excess domestic credit,⁴ which captures, at least in part, unsustainable macroeconomic policies that turn to appreciate the RER.

An increase in the NER leads to a rise (or fall) in the RER. The ability of NER variation to affect the RER will depend on the extent to which other macroeconomic policies are consistent with the objective of the nominal exchange rate change. Consistent policies will include inflation-anchoring (that is, domestic price stabilization). In particular, a nominal depreciation of the exchange rate may not have much effect if the accompanying macroeconomic policies are inconsistent with the NER regime. The effect of domestic credit on RER depends on whether it is used mainly on the tradable or non-tradable sectors. An increase in excess domestic credit would appreciate the RER.

Estimating Short-Run Equilibrium RER

Substituting equations (2) and (4) into (3) and arranging terms gives rise to our short-run equilibrium RER (to borrow the terminology of Montiel and Hinkle, 1999), which is the estimating RER expression in equation (5):

$$\begin{aligned} \log(\text{RER})_t = & \theta_0 + \theta_1 \log(\text{TOT})_t + \theta_2 \log(\text{OPEN})_t + \theta_3 \log(\text{GC/GDP})_t \\ & + \theta_4 \log(\text{FD/GDP})_t + \theta_5 \text{TP} + \theta_6 \log(\text{NER})_t \\ & + \theta_7 \log(\text{CREDIT/GDP})_t + \theta_8 (\text{EXCR})_t + \phi \text{RER}_{t-1} + u_t \end{aligned} \quad (5)$$

where:

$$\begin{aligned} \theta_j &= \lambda \alpha_j \quad (j = 0, 1, \dots, 8) \\ \phi &= (1-\lambda), \text{ and} \\ u &= \lambda \varepsilon. \end{aligned}$$

The long-run counterparts of the coefficient estimates of θ_j in Equation (5) are given by $\theta_j/(1-\phi)$.

Misalignment

Related to the RER is the RER misalignment, which calls for the determination of the path of the long-run equilibrium real exchange rate (ERER). In contrast to the short-run equilibrium RER, however, the ERER is a function of the steady-state values of the predetermined variables and the permanent (or sustainable) values of policy and exogenous variables, rather than the actual values of these variables (Montiel and Hinkle 1999). Changes in RER determinants result from both permanent (or sustainable) and transitory shocks. To measure the ERER, we need to estimate only the sustainable levels. The ERER is therefore obtained by: (i) adjusting the short-run equilibrium coefficients of the RER to their long-run counterparts; (ii) the sustainable components of the RER determinants are separated from their unsustainable components by estimating three-year centred moving averages of the RER determinants;⁵ and (iii) these permanent (or sustainable) components are used together with the corresponding long-run equilibrium counterparts of the estimated parameters of the RER equation to generate the path of the ERER.

The rate of distortion of the real exchange rate can be expressed by:

$$\text{RERD}_t \equiv \left[\frac{\text{ERER}}{\text{RER}} \right] - 1 \quad (6)$$

$$\begin{aligned} | &> 0 \Rightarrow \text{overvaluation} \\ | &< 0 \Rightarrow \text{undervaluation} \\ | &= 0 \Rightarrow \text{equilibrium} \end{aligned}$$

Where RERD = the rate of real exchange rate distortion or misalignment.

Data and Estimation Procedures

Data for this study were collected from the following sources: World Bank: *World Tables* and *African Development Indicators*; IMF: *International Financial Statistics*; FAO: *Production and Trade Yearbooks*; and the African Development Bank: *Selected Statistics on Regional Member Countries*. The study uses annual data from 1970 to 1996.

In running the regressions we first study the time series characteristics of all the variables. If the unit roots tests (using the Augmented Dickey Fuller test) reveal that our variables are non-stationary, we will test for co-integration. If the variables do not co-integrate, then we will difference them to stationarity before running our regressions.

Non-stationary variables might lead to spurious regressions. In this case, the results may suggest a statistically significant relationship between the variables in the model, when in fact this is just evidence of contemporaneous correlation. The ADF test assumes that the data-generating process is autoregressive to the first order. This is done so that the autocorrelation in the error term does not bias the test. The ADF includes first-difference lags in such a way that the error term is distributed as a white noise. The test is formulated as follows:

$$\Delta y_t = \alpha + \rho y_{t-1} + \sum_j \gamma_j \Delta y_{t-j} + \varepsilon_t \quad (7)$$

A unit root test implies testing the significance of ρ against the null that $\rho = 0$. If the results of the unit root test show that the variables are not stationary at their levels, we proceed with a co-integration analysis.

In a regression involving non-stationary variables, spuriousness can only be avoided if a stationary co-integrating relationship is established between the variables. Therefore, if two or more variables can be linked together to form an equilibrium relationship spanning the long run, then even though the variables themselves may contain stochastic trends they will nevertheless move closer over time and the difference between them will be stable. To test for co-integration in this chapter, we run our regressions and use the ADF unit roots test to test for the stationarity of the residuals. If the residuals are stationary, then we conclude for co-integration of series used in the model (Adam 1993; Perman 1989).

Econometric Results

Unit Root Test

After comparing the ADF statistics with the Mackinnon critical values provided by the Eviews econometric package, we came out with the following conclusions concerning the unit root tests (Table 16.1). Most of the variables are not stationary in their levels, except TOT. This implies the non-rejection of the null hypothesis of non-stationarity. But they are all stationary in their first differences. We cannot therefore specify the RER model in their levels without the risk of obtaining spurious regressions except where they are co-integrated. It is therefore necessary to ascertain whether the variables are co-integrated or not.

Table 16.1: Results of Unit Roots Test

Variables	ADF-statistic	Order of Integration
Log(TOT)	-3.301	0
Log(OPEN)	-4.016	1
Log(NER)	-3.512	1
Log(FD/GDP)	-3.060	1
Log(CREDIT/GDP)	-2.906	1
Log(GC/GDP)	-3.200	1
EXCR	-6.092	1
TP	-4.231	1
Log(RER)	-3.733	1
Log(RER) _{t-1}	-3.577	1

Note: the ADF critical values of -3.6959, -2.9750 and -2.6265 indicate significance at the 1, 5 and 10% levels, respectively.

RER Results

Two versions of equation (5) were estimated. The preferred version upon which subsequent analysis is based is labelled Model (2). The regression results are presented in Table 16.2. The variables included in Model (2) are significant at least at the 5 per cent level except the lagged dependent variable, which is significant only at the 10 per cent level. The residuals of the co-integrated regression are stationary at their levels as indicated by the ADF test. There is no evidence of serial correlation of the successive error terms as shown by the Breusch–Godfrey LM test-statistic.

As shown in Model (2), the degree of liberalization (openness) is found to be crucial in affecting the RER in the period under consideration. The positive and very highly significant sign of the volume of trade is consistent with RER depreciation.

The effects of the terms of trade (TOT) on RER are not predicted a priori as indicated earlier. Results show that TOT positively and significantly influences the evolution of the RER. The positive sign is an indication that the substitution effect outweighs the income effect, and an improvement in TOT would lead to a depreciation of the RER. This outcome is at variance with the empirical regularity of the income effect generally dominating the substitution effect.

The NER is negative and non-significant. This may not be surprising given that the nominal exchange rate is not a policy option for Cameroon owing to the fact that she belongs to a monetary union whose currency is pegged to the French Franc (FF).

Government consumption ratio has a negative and significant effect on the RER. The negative value is an indication that the government spends more on non-tradables. This tends to raise the prices of non-tradables relative to those of tradables, and the net effect leads to an appreciation of the RER. The long-term debt stock ratio has a negative and very highly significant effect on RER. This is a pointer that servicing such debts is consistent with RER depreciation and accumulating debt tends to appreciate the RER.

Domestic credit ratio has a positive and very highly significant effect on RER. The implication of this outcome is that domestic credit could increase the demand

for tradable goods used for investment purposes and the prices of these goods would increase relative to those of non-tradables, leading to a depreciation of the RER. On the other hand, excess credit attracts a negative and significant effect on the RER. This is an indication that unsustainable macroeconomic policies would tend to augment the demand for non-tradable goods and hence their relative prices.

Table 16.2: Regression Results and Estimated Long-run Parameters (the dependent variable is Log(RER))

Variables	Model 1	Model 2	Long-run Counterparts of Model 2
Constant	3.027** (2.288)	2.495** (2.062)	3.458
Log(TOT)	0.434** (2.443)	0.443** (2.492)	0.613
Log(OPEN)	0.401** (2.629)	0.450*** (3.120)	0.622
Log(NER)	-0.290 (-1.374)	-0.208 (-1.071)	-0.288
Log(GC/GDP)	-0.876** (-2.480)	-0.919** (-2.621)	-1.271
Log(FD/GDP)	-0.669*** (-4.380)	-0.674*** (-4.412)	-0.932
Log(CREDIT/GDP)	0.710*** (3.527)	0.700*** (3.484)	0.968
EXCR	-0.216** (-2.404)	-0.224** (-2.504)	-0.310
TP	0.684 (0.996)	-----	-----
RER(-1)	0.189 (1.063)	0.277* (1.804)	-----
R-squared	0.961	0.959	
Adj. R-squared	0.939	0.939	
LM	1.382 (p>0.258)	0.808 (p>0.382)	
F-statistic	44.046***	49.449***	
ADF	-4.833***	-4.606***	
Number observations	26 (1971-1996)	26 (1971-1996)	

Note: ***, ** and * indicate significance at the 1, 5, and 10% levels, respectively.

The variables are as defined earlier.

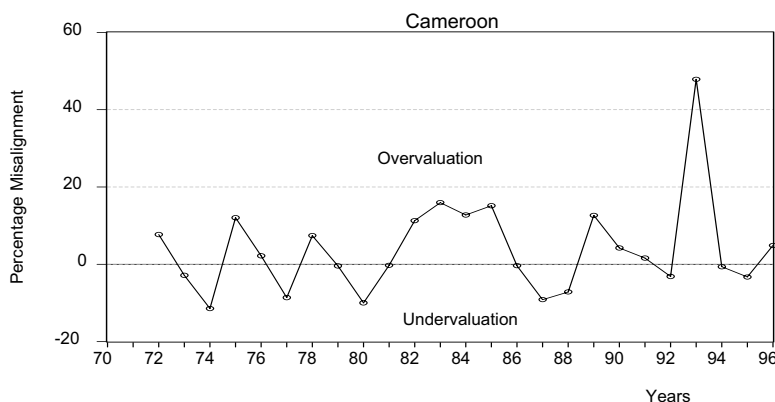
Misalignment Results

Fig. 16.1 shows the evolution of the rate of misalignment for the period under study. There is an indication that the RER was near equilibrium (with absolute value of RER misalignment less than one) in 1979, 1981, 1986 and 1994. The RER was undervalued for a number of years, with the height of undervaluation being in 1974 (11.48 per cent) and 1980 (10.03 per cent). The RER overvaluation was

relatively high in 1983 (15.94 per cent) and in 1985 (15.13 per cent); and reached its peak in 1993 (47.85 per cent, just before the 1994 devaluation).

The relatively high RER overvaluation of the late 1970s and early 1980s (with the exception of 1980) corresponds to the advent of oil exploitation and the commodity boom. This RER misalignment was not as pronounced as would have been expected, perhaps because of the prudent manner in which oil revenue was deliberately kept off-budget. Devarajan and de Melo (1987) believe that about three-quarters of the oil revenue was saved abroad. In addition, Cameroon registered a sizeable current account surplus between 1978 and 1982, and the government used the oil revenues to retire part of its foreign debt, as well as raising producer prices of cocoa and coffee when world market prices crashed in the early 1980s. To the extent that this windfall was spent domestically, it was not entirely channelled into consumption activities.

Fig. 16.1: Misalignment of the CFA Franc in Cameroon. 1972–96



Source: author's calculations.

Conclusions and Policy Implications

This study has attempted to explore the determinants of the real exchange rate and derive the path of equilibrium real exchange rate and the degree of its misalignment in Cameroon. The results indicate that in Cameroon, the real exchange rate is significantly influenced by both external and internal factors. These factors include variables such as the terms of trade, trade policy, government consumption, long-term foreign debt, domestic credit to the economy and unsustainable macroeconomic policies.

The real exchange rate was found to be misaligned over the period under study, the country experiencing both periods of real exchange rate overvaluation and undervaluation. The degree of overvaluation reached its peak in 1993 (47.85 per cent) – just before the 1994 devaluation. The real exchange rate became slightly

undervalued in 1994 and 1995 before becoming overvalued in 1996. A policy advice emanating from this study points to the importance of monitoring the determinants of real exchange rate with a view to its better management, in order to prevent the distortion of the incentive structure facing tradable goods. In this context, an understanding of real exchange rate determinants, especially those that can be manipulated internally, appears to be necessary, if the government intends to enhance the global competitiveness of the economy. The study suggests that real exchange rate management in Cameroon could require the manipulation of variables such as trade policy, government consumption, foreign debt and domestic credit to the economy.

Our results tend to indicate that although Cameroon cannot unilaterally influence the real exchange rate through the nominal exchange rate because of her membership of the Franc Zone, she could manage it through other macroeconomic variables.

Notes

- 1 The members of BEAC (Banque des Etats de l'Afrique Centrale) are: Cameroon, Chad, Central African Republic, Congo, Equatorial Guinea and Gabon; the members of BCEAO (Banque Centrale des Etats de l'Afrique de l'Ouest) are: Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal and Togo.
- 2 DLR stands for Devarajan, Lewis and Robinson who developed this model in their 1993 paper.
- 3 The consumer price index (CPI) is sometimes used: see, for example, Dorosh 1993; Edwards, 1989; and Elbadawi and Soto 1997. The GDP deflator has the advantage of a larger coverage than the CPI, and the disadvantage that it is based on factor prices and hence does not capture the underlying inflation rate. It is therefore appropriate for a country like Cameroon with a history of low rates of inflation. The drawback with the consumer price index is that it incorporates both the price indices for tradables and non-tradables alike.
- 4 Constructed as: $EXCR_t = [(DCREDIT_t / Money_{t-1}) - (DlogNER_t + grGDP_t)]$, where money = money supply, grGDP = growth in GDP. For the construction of a similar index, see Ghura and Grennes (1994).
- 5 There exist a number of time-series decomposition techniques for separating permanent from transitory shocks: see, for example, the methods elaborated by Newbold (1990).

References

- Adam, C.S., 1993, *Time Series Econometrics in Africa*, Lecture Notes for a Technical Workshop run by AERC, Nairobi: AERC.
- Aghevli, B.B. and P.J. Montiel, 1991, 'Exchange Rate Policies in Developing Countries'. In: Emil-Maria Claassen, ed., *Exchange Rate Policies in Developing and Post-Socialist Countries*, San Francisco: International Center for Economic Growth.
- Amin, A.A., 1996, *The Effects of Exchange Rate Policy on Cameroon's Agricultural Competitiveness*, AERC Research Paper No. 42, Nairobi: AERC.
- Amin, A.A. and Awung, W.J., 1997, 'Determinants of Real Exchange Rates in Cameroon, Congo and Gabon', *African Journal of Economic Policy*, Vol. 4, No. 1, pp. 29–60.

- Aron, J., I. Elbadawi and B. Kahn, 1997, *Determinants of the Real Exchange Rate in South Africa*, Working Paper Series WPS/97-16, Oxford: Centre for the Study of African Economies.
- Bautista, R.M. and A. Valdés, 1993, 'The Relevance of Trade and Macroeconomic Policies for Agriculture'. In: Romeo M. Bautista and Alberto Valdés, eds, *The Bias Against Agriculture: Trade and Macroeconomic Policies in Developing Countries*, San Francisco: Institute for Contemporary Studies.
- Baye, M.F., 1995, 'The CFA Franc Devaluation: Rationale, Consequences and Limitations for Cameroon' (manuscript).
- Cottani, J., D. Cavallo and M.S. Khan, 1990, 'Real Exchange Rate Behaviour and Economic Performance in LDCs', *Economic and Development and Cultural Change*, Vol. 39, pp. 61-76.
- Devarajan, S., 1997, 'Real Exchange Rate Misalignment in the CFA Zone', *Journal of African Economies*, Vol. 6, No. 1, pp. 35-53.
- Devarajan, S. and J. de Melo, 1987, 'Adjustment with a Fixed Exchange Rate: Cameroon, Côte d'Ivoire, and Senegal', *World Bank Economic Review*, Vol. 1, No. 3, pp. 447-87.
- Devarajan, S. and L.E. Hinkle, 1994, *The CFA Franc Parity Change: An Opportunity to Restore Growth and Reduce Poverty*, mimeo, World Bank.
- Devarajan, S., J. Lewis and S. Robinson, 1993, 'External Shocks, Purchasing Power Parity and the Equilibrium Real Exchange Rate', *World Bank Economic Review*, Vol. 7, No. 1, pp. 45-63.
- Dorosh, 1993, 'Effects of Exchange Rate and Trade Policies on Agricultural Prices in Pakistan'. In Romeo M. Bautista and Alberto Valdés, eds, *The Bias Against Agriculture: Trade and Macroeconomic Policies in Developing Countries*, San Francisco: Institute for Contemporary Studies.
- Dordunoo, C. and D. Njinkeu, 1997, 'Foreign Exchange Rate Regimes and Macroeconomic Performance in Sub-Saharan Africa', AERC Plenary Sessions: December 1995 and May 1996, *Journal of Africa Economies*, Supplement to Vol. 6, No. 3.
- Edwards, S., 1988, *Exchange Rate Misalignment in Developing Countries*, Baltimore: Johns Hopkins University Press.
- Edwards, S., 1989, *Real Exchange Rate, Devaluation and Adjustment*, Cambridge, MA: MIT Press.
- Edwards, S., 1990, 'Real Exchange Rate in Developing Countries: Concepts and Measurements'. In: T.J. Grennes, ed., *International Financial Markets and Agricultural Trade*, Boulder, CO: Westview Press.
- Elbadawi, I.A., 1992, *Real Over-valuation, Terms of Trade Shock, and the Cost of Agriculture in Sub-Saharan Africa*, Policy Research Working Papers, WP 5831, Washington, DC: World Bank.
- Elbadawi, I.A. and R. Soto, 1997, 'Real Exchange Rates and Macroeconomic Adjustments in Sub-Saharan Africa and Other Developing Countries', AERC Plenary Sessions: December 1995 and May 1996, *Journal of Africa Economies*, Supplement to Vol. 6, No. 3.
- Engle, R. and C. Granger, 1987, 'Co-integration and Error-Correction: Representation, Estimation, and Testing', *Econometrica*, Vol. 55, pp. 251-76.
- Ghura, D. and T. Grennes, 1994, 'Aggregate Trade Response to Economy-Wide Distortions in Sub-Saharan Africa', *Journal of African Economies*, Vol. 3, No. 3, pp. 359-86.
- Khan, M.S., 1987, 'Macroeconomic Adjustment in Developing Countries: A Policy Perspective', *World Bank Research Observer*, Vol. 2, No. 1, pp. 23-42.

- Kidane, A., 1997, *Exchange Rate Policy and Economic Reform in Ethiopia*, AERC Research Paper No. 54, Nairobi: AERC.
- Killick, T., 1985, 'Economic Environment and Agricultural Development: The Importance of Macroeconomic Policy', *Food Policy* (February), pp. 29–40.
- Krumm, K.L., 1993, 'A Medium-Term Framework for Analysing the RER, With Applications to the Philippines and Tanzania', *World Bank Economic Review*, Vol. 7, No. 2, pp. 219–45.
- Krueger, A.O., M. Schiff and A. Valdés, 1988, 'Agricultural Incentives in Developing Countries: Measuring the Effects of Sectoral and Economywide Policies', *World Bank Economic Review* (September), pp. 255–72.
- MacKinnon, J.E., 1980, 'Critical Values for Co-integration Tests', Discussion Paper, San Diego: University of California.
- M'Bet, A. and A.M. Niamkey, 1993, *European Economic Integration and the Franc Zone: The Future of the CFA Franc after 1996*, AERC Working Paper, Nairobi: AERC.
- Montiel, P.J. and L.E. Hinkle, 1999, 'Exchange Rate Misalignment: An Overview'. In: Laurence E. Hinkle and Peter J. Montiel, eds, *Exchange Rate Misalignment: Concept and Measurement for Developing Countries*, A World Bank Research Publication, Washington, DC: World Bank.
- Newbold, P., 1990, 'Precise and Efficient Computation of Beveridge–Nelson Decomposition of Economic Time Series', *Journal of Monetary Economics*, Vol. 26, pp. 453–7.
- Obadan, M.I., 1994, *Real Exchange Rate in Nigeria: A Preliminary Study*, Monograph Series No. 6, Ibadan: National Centre for Economic Management and Administration.
- Ogun, O., 1998, *Real Exchange Rate Movements and Export Growth: Nigeria, 1961–1990*, AERC Research Paper No. 82, Nairobi: AERC.
- Parikh, A. and B. Kahn, 1997, 'Determinants of Real Exchange Rates in South Africa: A Short-run and Long-run Analysis', *Journal for Studies in Economics and Econometrics*, Vol. 21, No. 2, pp. 1–21.
- Perman, R., 1989, 'Co-integration: An Introduction to the Literature', *Strathclyde Papers in Economics*, Vol. 89, No. 7.
- Saudoulet, E. and A. Janvry, 1995, *Quantitative Development Policies*, Berkeley: University of California Press.
- Williamson, J., 1994, *Estimating Equilibrium Exchange Rates*, Washington, DC: Institute of International Economics.
- Williamson, J., 1997, 'Exchange Rate Policy and Development Strategy', AERC Plenary Sessions: December 1995 and May 1996, *Journal of Africa Economics*, Supplement to Vol. 6, No. 3.
- World Bank, 1983, *Sub-Saharan Africa: Progress Report on Development Prospects and Programmes*, Washington, DC: World Bank.

Appendix

Table 16A.1: Real Exchange Rate and Real Exchange Rate Misalignment in Cameroon

Year	Cameroon	
	RER	RERMIS
1970	141.33	NA
1971	138.03	NA
1972	130.51	7.66
1973	152.64	-2.88
1974	188.07	-11.48
1975	163.66	12.03
1976	192.23	2.15
1977	224.32	-8.65
1978	195.59	7.38
1979	200.61	-0.44
1980	208.92	-10.03
1981	185.19	-0.31
1982	157.44	11.27
1983	134.43	15.94
1984	120.33	12.72
1985	106.09	15.13
1986	101.12	-0.40
1987	100.00	-9.16
1988	88.21	-7.16
1989	79.03	12.64
1990	85.40	4.18
1991	89.86	1.60
1992	87.61	-3.19
1993	49.44	47.85
1994	58.77	-0.67
1995	55.75	-3.34
1996	52.78	4.86

Source: computed by the authors.

Public Debt and Public Investment in Cameroon

George N. Mbanga and Fondo Sikod

Introduction

A major problem facing many Sub-Saharan African (SSA) countries is indebtedness, especially external indebtedness. From just over US\$8 billion in 1970, these debts grew to over US\$223 billion by 1995, representing over 110 per cent of GNP (Iyoha 2000; Osei, 2000). Debt service payments also rose dramatically over the same period, especially in relation to exports. Debt service constitutes a considerable share of the budget in many countries, and so imposes significant constraints on domestic investments. The size of the current debt and debt service payments is compounded by poverty and the structural weaknesses of the economies of these countries. Most of them produce and export the same suite of exports (mostly primary products), and so have not been able to diversify their export base to adjust to the changing world economic conditions. With the rapid build-up of especially external debts, and the poor performance of the domestic economies, the debt crisis of the SSAs has deepened and the debt burden has become even more crushing.

The increasing debt burden/poverty link militates against any rapid economic growth and development. Analysts and international policy-makers appear to have reached a consensus that a satisfactory recovery of investment and output growth in indebted SSA countries will remain difficult as long as they are saddled with a burden of debt servicing that requires the transfer of a sizeable amount of resources abroad. Thus, many now believe a necessary condition for economic growth and development is debt relief that goes beyond rescheduling. This thinking has led the World Bank and the International Monetary Fund to add the Heavily Indebted Poor Country (HIPC) classification to the already existing low-income (World Bank) and low human development (UNDP) classifications. The IMF and the World Bank in their recent thinking and discussions about development have been considering total debt forgiveness as a means of relieving the HIPCs from the burden of debt. A fundamental assumption of this initiative is that the liberated resources will be

channelled into investments that will allow for sustainable economic growth. Rather than give a blanket, across-the-board debt forgiveness to all the HIPC's, an in-depth analyses of the situation in individual countries is necessary to ensure that the liberated resources are invested in areas that will alleviate poverty and lead to sustainable economic growth. This study on Cameroon is an effort in this direction.

The purpose of this chapter is to explore Cameroon's indebtedness and public investments, and also to consider the scenario where most of the debts are forgiven, and the implications for economic growth via investments. The focus of the analysis is on debt and public investments from 1971 to 1998. During this period, Cameroon pursued various economic policies including adopting structural adjustment policies. The main objective is therefore to empirically evaluate the impact of debt and debt service payments on public investment expenditures in Cameroon. Specific issues addressed include the measurement of the impact of debt service payments on public investments, that is, the 'crowding-out' effects.

Background Information

The performance of the Cameroon economy can be divided into three distinct periods: in the years following independence, that is, the 1960s and 1970s, Cameroon performed fairly well in terms of the growth rate of gross domestic product (GDP) and national income, averaging 5.7 per cent per year. This growth rate was based on the diversity of agricultural production. In the late 1970s, specifically from 1978, Cameroon started the production and export of petroleum. This boosted average annual income growth to 10.1 per cent (World Bank 1995). This growth rate lasted until 1985 when the fortunes of the country started changing for the worse. As for the debt situation, it remained generally manageable during the period up to 1986. Although overall debt stock rose at an average rate of 17 per cent per annum between 1975 and 1986, the effect of the debt burden was mitigated by the strong average growth rate of both real GDP (8 per cent per year) and exports (15 per cent per year). Also, although the debt-to-GDP ratio increased from 21 to 42 per cent during this period, the debt service ratio remained moderate, averaging 14 per cent of exports of goods and services.

Petroleum revenues dropped in the 1985–86 year, as a result of the simultaneous reduction in prices and lack of exploitable sites. At the same time, the terms of trade for crop exports also declined. The situation was further aggravated by the fact that most of the export income was expressed in US dollars, whose exchange rate against the CFA franc fell about 40 per cent after June 1985 (Tchoungui et al. 1996). The slowing down of the economy brought to the fore, serious deficits in public finance and balance of payments. The budgetary deficit was financed by a reduction in state deposits in the banking sector, a build-up of internal arrears on payments and an increase in foreign indebtedness. The balance of payments deficit, on the other hand, was financed by foreign debt, the repatriation of external bank assets and the build-up of a debit balance with the French Treasury. The first measure to fight the economic downturn was the Finance Law of 1987/88, which aimed at

cutting public spending. Unfortunately, the persistent weakness in primary commodity markets and its effects on public revenue frustrated these attempts to halt the deterioration of the economic and financial situation. The results were a build-up of arrears on payments by the state and growing illiquidity in the payments system. The government then resorted to a series of adjustment and reform programmes in concert with the International Monetary Fund (IMF) and the World Bank. A SAP loan was approved by the World Bank in 1989 and renewed in essentially the same form in 1994.

In view of the increase in effective value of the CFA franc, the measures taken can now be judged in hindsight to have been too late and too weak. The currency increased in value about 30 per cent in real terms from 1984–85 (July–June) to 1991–92 (Tchoungui et al. 1996). The problems caused by this increase were compounded by a sharp drop in the terms of trade. As the tradable goods sector suffered a cost–price squeeze, public revenue fell, domestic arrears built up quickly and the banking system found itself increasingly insolvent. Over the seven-year period 1987/88–1993/94, real GNP fell 30 per cent, and real income per capita fell 50 per cent. Foreign debt tripled to more than 60 per cent of GNP, and the debt service ratio rose strongly to over 42 per cent. Arrears on foreign payments have been recurring. The debt stock grew on average by 17 per cent a year, while export growth virtually ceased. Thus, debt-to-GDP and debt-to-export ratios rose from 32 and 219 per cent respectively in 1987 to 113 and 369 per cent in 1997. More importantly, scheduled debt service ratio shot up dramatically from 20 per cent in 1985 to over 60 per cent in 1997. These increases put enormous pressure on the economy especially on government finances, at a time when the economy was performing very poorly.

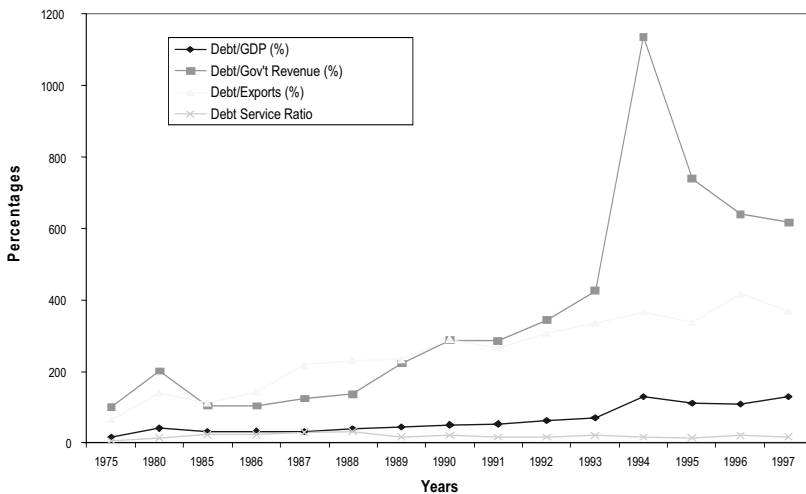
This led to the accumulation of debt service arrears (for all types of creditors). The ratio of debt stock to government revenue grew from 104 per cent in 1986 to a peak of 1,136 per cent in 1994 (after the CFA franc devaluation) and fell back to 618 per cent in 1997. By 1996, Cameroon gained admission into the group of countries classified as HIPC, with an alarming net present value (NPV) of debt equivalent to 353 per cent of exports of goods and services, a scheduled debt service ratio of 57 per cent, and a scheduled ratio of debt service to government revenue of 94 per cent. See Table 17.1 and Fig. 17.1 for details.

Devaluation of the CFA franc took place in January 1994, long after the start of other adjustment measures. One disturbing aspect of the macroeconomic management of Cameroon has been the failure to respond favourably to the ministrations of the structural adjustment programmes (SAPs). Some key fiscal and structural measures agreed upon with the IMF were not implemented on time. These delays caused a shortfall in non-oil-based revenue for the state, preventing compliance with other programme obligations. SAPs were recommended by the World Bank and IMF as an antidote to the economic crisis of Cameroon, and presented as a programme to liberalize the economy and facilitate sustainable growth. Unfortunately, the outcome, especially given the reluctance and wariness with which Cameroon has implemented the programmes, has been declining incomes and living standards, mounting unemployment and increasing poverty.

Table 17.1: Cameroon: External Debt Indicators, 1975–97

Year	Debt/GDP (%)	Debt/Gov't Revenue (%)	Debt/Exports of Goods and Services (%)	Debt Services Ratio
1975	17.0	101.2	65.5	6.7
1980	41.1	202.7	140.8	15.3
1985	31.1	104.0	112.6	22.8
1986	32.7	104.2	143.4	23.3
1987	31.9	125.1	218.7	30.8
1988	39.7	137.5	231.1	32.7
1989	44.8	223.2	233.7	17.4
1990	51.1	287.8	289.5	22.6
1991	53.5	286.3	264.8	16.8
1992	63.6	343.9	307.2	16.3
1993	69.6	426.8	335.4	27.5
1994	129.2	1,135.4	365.0	21.8
1995	110.9	740.0	338.3	20.6
1996	109.0	641.2	416.6	22.3
1997	128.8	617.6	368.7	20.4

Source: World Bank: *Global Development Finance*, 1998 and IMF, 1999.

Fig. 17.1: Cameroon: External Debt Indicators, 1975–97

Source: author's calculations.

Cameroon's Debt Profile

Debt Accumulation

Debt allows a country to invest beyond the limits of domestic capital by tapping into capital from capital-surplus countries (Klein 1994). This is possible through the putting in place of efficient and economically justified investment projects with the borrowed funds. Cameroon has become a major beneficiary of this policy as evidenced by its various five-year socio-economic development plans. In the first plan (1960–65), external financing made up 72 per cent of total investment. In the second plan (1966–70), it represented 37 per cent. Under the third plan (1971–76), 25 per cent of the funding came from external sources. In the fourth (1977–81) and fifth (1982–86) plans, the role of external financing continued to be very important. Investment expenditure as a share of the budget increased steadily over the period of the socio-economic plans (Mbanga 1994).

What is very important about external debt is that no level, even a low level, can be serviced without difficulties by a developing country (Friedman 1983). Despite the outflows needed to meet debt services, the countries must also pay for essential imports for consumption, production and investment. In the case of Cameroon, the fact that the external debt is concentrated in the public sector has profound implications for adjustment and growth. The country has two serious problems to overcome: (i) as national resources are transferred to foreign creditors by way of debt service payments (interest payments and amortization), there is a 'crowding-out' effect on both private and public investments. Private investors will hesitate to invest in the country for fear of being taxed too highly to provide funds for external debt payment. External debt servicing transfers or exports of capital thus reduces the funds that would have been invested by the government. (ii) Heavy accumulation of external debt triggers an increase in the internal or domestic debt contracted by the state with its own citizens and in local currency. Resources have to be transferred from the private sector to enable the latter to honour its external obligations. Although the interest payments and principal repayments of internal debt do not represent the export of capital, the amount of resources that would have been invested by private investors at home is nevertheless greatly reduced. This explains why the situation of internal debt linked to public investment was so precarious during the 1990s in Cameroon.

Numerous studies (e.g. Ajayi, 2000a and b; Fosu 1996 and 1999; Iyoha 2000; Mbire and Atingi 2000, Elbadawai, Ndulu and Ndungu 1997) have been done on Africa to show that once debt gets a firm grip on a country it is difficult to eradicate, and has severely impaired the socio-economic development of the debtor countries. As of 31 December 1997, Cameroon owed external creditors US\$9.3 billion, representing 129 per cent of GNP and 369 per cent of exports of goods and services, up from a 1975 low of 17 and 66 per cent, respectively. As for internal debts, they remained quite low and manageable until 1991/92, when they jumped from under 10 to 29 per cent of GDP. Internal debts have remained over 20 per cent of GDP since then. Internal debts account for less than 10 per cent of total debts.

Debt Service Payments

Over 70 per cent of debt service payments go towards servicing external debts. This is quite harmful to investments. The high debt service payments are a function of the high debt stock, and the need to restore the creditworthiness of the country. It is also an indicator of the debt management policy of the country. In Cameroon, debt service payments (interest and amortization) have usually taken a considerable part of the public budget. In 1971, debt service payments represented only 3 per cent of total expenditure. In 1981, the figure had climbed to 12 per cent of total expenditure and 23 per cent of public investments (Biao et al. 1999), and in 1997 it jumped to 73 per cent of total revenue. For the 1998/99 fiscal year, debt service payments were estimated to represent 44 per cent of total revenue. These statistics show that most of the resources of the state go toward servicing debts, thus stifling investments. As for internal debts, Cameroon was unable fully to meet the payments because of the economic crisis that had led to a reduction in state revenues. From 1989 to 1992, there were hardly any internal debt payments; in 1991/92, for example, debt service payments were a mere US\$2 million. Internal debt payments climbed to US\$77 million by 1996/97. During the Enhanced Structural Adjustment Facility (ESAF) period with the IMF, which ran from 1997 to 2000, enormous efforts were made to service internal debt. The debt service ratio rose from 0.03 per cent in 1990/91 to 6.2 per cent in 1998/99.

Debt Arrears

Debt arrears are the total of scheduled debt service payments that have fallen due, but remain unpaid, owing either to political or economic crisis (Klein 1994). Countries may lose their international worthiness by failing to honour their debt obligations. Because of the economic and political crisis, Cameroon accumulated massive arrears in 1990, which had serious financial repercussions on the state budget. The arrears were on both external and internal debts. In 1989/90, internal debt arrears represented 29.8 per cent of total arrears on public debt. This implies that considerable resources were concentrated on external debt servicing. There is more pressure on the government to service external debts than there is to service internal debts. Although internal debts may seem to pose fewer problems than external debts, since they are contracted by the state with its own citizens and in local currency, the burden of internal debt still exerts an adverse effect on public investment.

Debt Burden and the Social Sector

The average Cameroonian feels the impact of the debt burden through decreased availability of social services, such as education, health and transportation infrastructure. This is because the opportunity cost of debts is the projects in the social sectors that are foregone in order to service debts. As the debt service payments increase, resources are transferred from the social sector to meet these payments, thus aggravating the poverty situation in the country. Expenditure for health and

education declined over the period of the economic crisis. The scarcity of foreign exchange earnings to pay for imports meant that health facilities lacked the basic equipment necessary for their functioning. From 1986 the growth rate of expenditure in the social sector (on average 15 per cent) was far less than the growth rate of external debt (on average 25 per cent).

Debt Relief Operations

To address its external debt problems, Cameroon implemented a first set of measures in 1987/88, and in 1988/89 adopted a comprehensive programme aimed at stabilizing government finances and reactivating the economy. To support this programme, the IMF, in September 1988, approved a purchase under the compensatory financing facility for the equivalent of SDR 46.35 million and a stand-by arrangement in an amount equal to SDR 69.53 million, to cover the period to 31 March 1990. This arrangement was later extended to 30 June 1990, but with the amount reduced to SDR 61.8 million. It was followed in December 1991 by a second stand-by arrangement for SDR 28 million, covering the nine-month period ending September 1992. The World Bank, for its part, approved a US\$150 million structural adjustment loan in June 1989.

As a result of these measures, the Paris Club twice rescheduled the current maturities and arrears of Cameroon's official debt. Cameroon has benefited from five debt relief agreements from the Paris Club. The first two agreements consolidated arrears and maturities falling due in the period 1 January–3 September 1992. Following the signing of the third stand-by arrangement with the IMF in 1994, the Paris Club wrote off about 50 per cent of Cameroon's external debt and rescheduled the payment period for the rest to 23–25 years with a grace period of 6–14 years. In addition, members of the Club were advised to convert part of the debt owed them into development projects – such as the conversion of debt into environmental protection projects, aid projects, investment projects or into local currency. The treatment of Cameroon's external debt at the Paris Club was in accordance with the Trinidad and Tobago terms and the recommendations of the heads of State and Government of G7 during the London Summit in July 1991.

Cameroon also benefited from debt relief granted by the Paris Club in 1995 through the Naples terms. According to the Naples terms, creditors could either cancel 50 per cent of debt service falling due in an agreed period, while consolidating the rest at market interest rates over 23 years with six years of grace, or reschedule at concessional rates over 23 years so that repayments in net present value terms would fall by the same amount as in the first option. In October 1997, the Paris Club cancelled 50 per cent of the principal and interest of Cameroon's debts. The combination of this cancellation and the different reschedules obtained permitted Cameroon to embark on a three-year economic and financial programme (July 1997–June 2000) under the Poverty Reduction and Growth Facility (PRGF). Having benefited from the Toronto terms (33 per cent), London terms (50 per cent), Naples terms (67 per cent), etc., the main target left was for Cameroon to reach the 'decision point' in the HIPC initiative, which would have the debts reduced by more

than 90 per cent. This decision point was reached in October 2000. Under the HIPC initiative, all types of debts (even multilateral) are affected.

Trends in Public Investments

External debt and its servicing constitute a severe handicap to both private and public investments in developing countries. This is because the addition to the stock of debt over time fails to contribute to economic growth and development, and in particular to a country's ability to increase investment (Khan and Villanueva 1991; Elbadawi, Ndulu and Ndung'u 1997; Greene and Khan 1990; Ajayi 2000a; Fosu 1996). A number of studies have demonstrated the presence of this 'debt crowding-out' hypothesis and its adverse effects on economic performance in Africa: Ajayi (2000b) on Nigeria; Mbire and Atengi (2000) on Uganda; Mjema (1996) on Tanzania; Fosu (1996 and 1999) on Sub-Saharan Africa; Iyoha (2000) on Sub-Saharan Africa; Osei (2000) on Ghana; Ng'eno (2000) on Kenya. The main finding of these studies is that debt servicing is the main impediment to growth through its negative effects on investment. The rationale is that a greater portion of foreign currency from exports is required to service the debt, and there may be a decrease in external capital because of a reduction in creditworthiness, all of which make it more difficult to expand infrastructure, start new projects, continue old projects, and provide the economy with needed capital goods and raw material from other countries (Greiger 1990).

The most important factors responsible for recent poor performances of investment and per capita GDP in Cameroon and many developing countries has been the mounting external debt and its servicing. Debt overhang in the form of a high proportion of debt to GDP reduces the incentives for investment because the returns from existing investment, especially foreign exchange, will be used to service debt (Borensztein 1990; Ajayi 2000a; van Wijnbergen 1991). Other indirect negative effects on the rate of private investment are low profitability owing to depressed economic activity, and debt-induced declines in public investment, which is complementary to private investment (Khan and Vilaneua 1991). Also, Blejer and Khan (1984a and b); Moshi and Kilindo (1999); Asante (2000); Amin (1998) and others have demonstrated in their various studies how public sector investment has a significant bearing on private sector investment. This means that debt and debt servicing affect private sector investment in two different ways. The first is a direct effect through the 'debt-overhang', which discourages private investors from investing, and the second is the indirect or 'crowding-out' effect where debt service payments reduce public investment, which in turn reduces private investment. This is very obvious in the latter case because there are economies of scale by the public provision of some facilities such as communication utilities or infrastructure, and other social services, which go a long way to foster the activities of private firms. The non-provision of such services increases the cost of production to private producers as well as forcing the firms to allocate scarce resources away from private investment (IMF 1999; Amin 1998). Moshi and Kilindo (1999) and Amin (1998) have shown that public investment in infrastructure significantly determined private sector investment in Tanzania and Cameroon, respectively.

Table 17.2: Cameroon: Savings and Investment (percent of GDP), 1984/85–1997/98

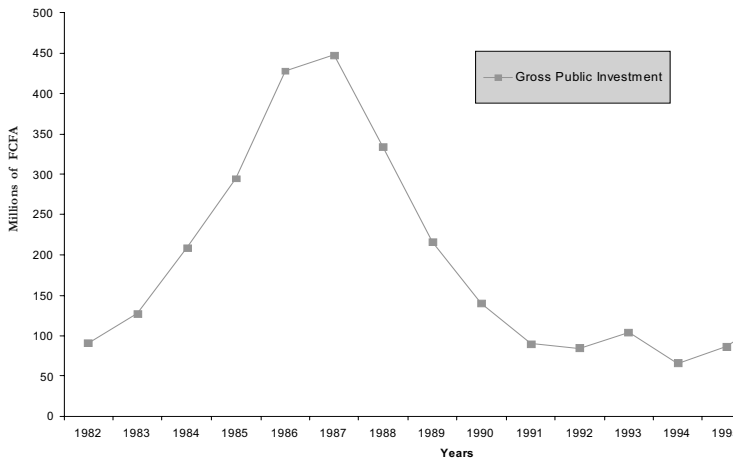
	1984/	1985/	1986/	1987/	1988/	1990/	1991/	1992/	1993/	1994/	1995/	1996/	1997/	1998/
Total Economy	-5.3	-5.1	-8.7	-4.9	-1.6	-1.6	-0.4	1.4	-5.4	-4.1	-0.8	-2.3	-1.3	-2.5
Net Savings	CAP	20.4	16.0	16.0	15.5	16.2	16.2	14.9	11.2	11.2	13.7	13.0	14.9	15.9
Gross Domestic	24.9	25.5	24.7	20.9	17.1	17.8	16.7	13.5	16.6	15.3	14.5	15.4	16.2	28.4
Investment														
Private Sector	-7.1	-5.0	-2.0	2.4	4.2	5.7	5.4	7.3	0.0	2.9	2.2	1.7	-1.1	-2.1
Net Saving	10.0	10.1	11.3	14.1	15.1	18.1	18.1	18.0	14.7	17.0	15.6	13.2	14.0	14.3
Gross Domestic	17.2	15.1	13.3	11.7	10.9	12.3	12.7	10.8	14.7	14.0	13.3	14.9	15.2	16.4
Investment														
Central	1.8	-0.1	-6.6	-7.3	-5.8	-7.3	5.9	-5.8	-5.4	-7.0	-3.0	-0.7	-0.2	-0.4
Government														
Net Savings	9.5	10.3	4.8	1.9	0.4	-1.9	-1.9	-3.2	-3.5	-5.7	-1.9	-0.2	0.8	1.6
Gross Domestic	7.7	10.4	11.4	9.2	6.1	5.5	4.0	2.7	1.8	1.3	1.2	0.5	1.0	2.0
Investment														

Source: IMF 1999, Table 7, p. 40.

Government saving was negative from 1989 to 1997 (Table 17.2). After recording high levels during 1984–89, public investment declined from 1990 to 1997. During 1986/87–1994/95, external current account deficits were driven mainly by fiscal deficits of the central government. During this period, government reduced its savings more than it reduced public investments; the private sector recorded a relatively high level of saving while keeping modest levels of investment. Also, the revenue-to-GDP ratio was declining as unpaid taxes were being saved by the private sector. However, in the face of uncertainties about current and future government policies and other structural constraints, the private sector reduced its level of investment (up to 1995/96). By reducing outlays in social and economic infrastructure, the government appears to have constrained private sector investment and growth (Amin 1998).

The driving force behind the fall in public and private investment is the burden of debt. External debt has become a heavy burden on Cameroon's budget, and has crowded out needed spending on priority sectors, such as health, education and infrastructure, that have a lasting impact on economic growth. Borrowing (externally and internally) to finance persistent deficits has increased the debt burden and posed doubts as to the government's ability to service debt. See Fig. 17.2.

Gross private investment and gross public investment did not perform well during the period 1981/82–1996/97. Gross public investment dropped precipitously from 1986/87 to 1994/95 (by 81 per cent) before recovering slightly by 1996/97. Gross private investment also dropped from 1985/86 to 1992/93 (by 38 per cent) before starting to recover (Table 17.3). The performance of the investments thus enacted the complementarity notion often insinuated between the public and private investments. Another characteristic of the behaviour of the two types of investments is that both respected the declining trend in the state budget caused by the economic crisis that started in 1985/86.

Fig. 17.2: Cameroon: Public Investments, 1982–97

Source: author's calculations.

There is a widespread perception among policy-makers in Cameroon that debt overhang has been an impediment to economic recovery. The accumulation of arrears entailed a cessation of lending by international banks to the government by 1991 and a sharp reduction in private sector access to international capital market (IMF 1999). This explains why both gross public investment and gross private investment performed very poorly between 1990/91 and 1991/92. Recording negative growth rates of –25 per cent for private investment and –56 per cent for public investment for the fiscal year 1990/91, and –15 per cent and –6 per cent, respectively, for the fiscal year 1991/92. It was only after growth prospects improved following the 1994 devaluation that lending by international banks to a few export-oriented companies picked up, especially to those with close relations with foreign companies (mainly subsidiaries), and mostly in the form of export credits. This helped to raise the growth rate of gross private investment and gross public investment by 16 and 23 per cent, respectively, for the 1994/95 fiscal year.

The Public Investment Model

Debt variables such as debt service payments as a ratio of exports, net transfers as a proportion of the GDP, and other variables such as foreign reserves as a ratio of imports, and government fiscal balance (deficit or surplus) as a ratio of GDPs, have greatly affected public investment in Cameroon. The public investment equation has consequently been specified as follows:

$$I_G/GDP = b_0 + b_1\Delta Y + b_2DSP/X + b_3NT/GDP + b_4RES/M + b_5DEF/GDP_{(-1)} + b_6RPOP + u \quad (1)$$

Debt service payments are made up of interest payments and principal repayments (amortization). We can therefore restate (1) as:

$$I_G/GDP = \beta_0 + \beta_1 \Delta Y + \beta_2 INT/X + \beta_3 PRP/X + \beta_4 NT/GDP + \beta_5 RES/M + \beta_6 DEF/GDP_{(-1)} + \beta_7 RPOP + u \quad (2)$$

where:

I_G/GDP	= public investment as a ratio of GDP
ΔY	= annual change in the GDP, as above
INT/X	= ratio of interest payments to exports
PRP/X	= ratio of principal repayments to exports
NT/GDP	= ratio of net transfers on debt to GDP
RES/M	= foreign reserves as a ratio of imports
$DEF/GDP_{(-1)}$	= ratio of government fiscal balance (deficit/surplus) to the lagged value of GDP
$RPOP$	= growth rate of population

The purpose of this model is to investigate the relationship between public investment and the debt burden. The proxies for debt burden are the debt service ratios (sum of interest payments and amortization of debt divided by total exports) and the ratio of net transfers to GDP. The ratio of debt service to exports is used because a high ratio implies that a large percentage of foreign exchange will be needed to service the debt, thereby diverting foreign exchange from investment and reducing potential capital formation. Thus, the values of β_2 and β_3 are expected to be negative, in order to capture the crowding-out effect of debt service payments on investment.

Net transfers are also included as an explanatory variable, because excessive debt affects the country's credit and in turn reduces disbursements and thus reduces net transfers. In this way, less external capital will be available for investment. The coefficient β_4 is expected to be negative. Foreign reserves as a ratio of total imports (M) are expected to affect public investment in the face of a debt overhang. This is because debt service payments have drawn down drastically the international reserves of the country and reduced public investment. β_5 is expected to be negative because the debt service difficulties of the government have aggravated the budgetary deficits over the years. In Cameroon, for example, the net financial position of the government was negative during most of the period 1984/85–1997/98, though some improvement was observed from 1994/95. Finally, the coefficient of the rate of population growth (β_7) is ambiguous; this is because a high population can have a negative as well as a positive impact on public investment. Equation (1) made use of overall or aggregate data on debt service payments, while equation (2) was estimated separately using disaggregated data on internal and external debt.

Data and Data Sources

Data used for the analysis came from the debt management office (Caisse Autonome d'Amenagement, CAA), the Department of Statistics and National Accounts of the Ministry of the Economy and Finance, and the National Assembly library.

Also, use was made of national publications such as: *Lois des Finances; Cameroon in Figures*; various five-year socio-economic and development plans; and annual reports of the National Council of Credit. Additional data to complement Cameroon sources came from World Bank publications: *Global Development Finance, African Development Indicators*, and *World Debt* tables; the *Yearly Financial Statistics and World Economic Outlook*, published by the IMF; and *Etudes et Statistiques de la BEAC*, published by the Bank of Central African States (BEAC).

Results

Five versions of the equations are estimated, using different sets of data. The first equation took overall data on public debt and its service payments (i.e. pooled data on external and internal debt). The second and third used only data on external debt and its servicing. The fourth and fifth were estimated using only data on internal debt and its servicing. The aim was to separate the effects of each type of debt on public investments. The results of the model are presented in Table 17.3.

Table 17.3: Regression Results of the Public Investment Model

Variable/Equations	1	2	3	4	5
Constant	-7.608* (-5.754)	-3.703** (-2.096)	-0.577 (-0.223)	-0.708 (-0.446)	0.265 (0.141)
ΔY	0.0213 (1.625)	0.0224 (1.074)	0.0034 (1.302)	0.0309 (1.300)	0.0026 (1.092)
DSP/X	-0.411* (-7.634)	-0.245* (-3.351)	-	-0.778*** (-1.877)	-
INT/X	-	-	0.116 (0.450)	-	0.193 (0.123)
PRP/X			-0.0120 (-0.064)	-	1.931 (1.540)
NT/GDP	0.0475** (2.201)	0.0423 (1.181)	-0.0066 (-0.157)	0.0023 (0.061)	0.0126 (0.328)
RES/M	0.0316 (0.631)	0.0619 (0.785)	0.135*** (1.142)	0.531 (1.661)	0.152 (0.387)
DEF/GDP(-1)	-0.194* (-1.812)	-0.241 (-1.366)	-0.485 (-1.977)	-0.591* (-3.241)	-448*** (-2.010)
RPEP	0.705* (3.431)	0.359 (1.154)	0.202 (0.511)	0.106 (0.298)	0.0980 (0.277)
D	4.377 (5.503)	2.596** (2.176)	2.474 (1.610)	2.480*** (1.805)	0.0980 (0.277)
R ²	0.828	0.570	0.341	0.429	0.464
R ² (Adj)	0.768	0.420	0.064	0.229	0.238
D-W statistic	1.708	1.983	1.934	1.007	1.879
F statistic	13.798	3.788	1.331	2.148	2.053

* significant at 1%; ** significant at 5%; *** significant at 10%; t-ratios are in parentheses.

Source: author's calculations.

There is a positive link between annual change in growth and public investment ratio, implying that over the years economic growth has fostered public investment.

The debt service payments have crowded out public investment in the case of external debt. Thus, when we use pooled data, the crowding-out effect is verified. When data are disaggregated, the crowding-out effect is noticed only with principal repayments. This means that the excessive debt service burden has acted as a disincentive to engage in meaningful investment as policy-makers fear that foreign creditors will appropriate most of the funds through debt service (Claessens et al. 1997).

The relationship between the net transfer ratio and public investment ratio is positive in four of the equations. Thus, the excessive debt has not reduced the net transfers of Cameroon, as disbursements were still greater than debt servicing. This means that the country did not quite lose its creditworthiness, in the face of the mounting debt burden. However, the positive relationship between the ratio of international reserves to total imports and public investment ratio confirmed that the debt service burden drained off international reserves, which helped in reducing public investment, since the growth rate of public investment fell with this ratio.

Cameroon recorded budget deficits during 1986/87–1993/94, before returning to relative stability after the 1994 devaluation (IMF 1999). This has been reflected in the results as this has adversely affected public investment in all the equations. The results also showed a positive relationship between population growth rate and public investment. This implies that an increase in the population has improved public investment.

Conclusions and Policy Recommendations

The aim of this chapter has been to examine the relationship between public debt and debt service payments (external and internal debt) on public investments in Cameroon. In order to capture the impact of public debt on investment, pooled data on public debt were used; the data were then disaggregated into internal and external debt so as to measure their impact on public investments. Also, the debt service payments were disaggregated into interest payments and principal repayments. The results of the study have shown that the debt burden and debt service burden are the main factors that have crowded out investment in Cameroon. The results further confirm the hypothesis that the external debt burden has stronger adverse effects on investments than the internal debt burden. The main policy recommendation is that Cameroon should make good use of the large debt cancellation, such as the HIPC package, which substantially reduces the debt burden and serves as a boost to investment. Thus, resources to be 'saved' from this operation should be assiduously invested, especially in the social services (education, health, infrastructure, etc.).

References

- Ajayi, I., 2000a, 'Globalisation in Africa', paper presented at the AERC Biannual Research workshop plenary, Nairobi: AERC.
- Ajayi, I., 2000b, 'Macroeconomic Approach to External Debt: The Case of Nigeria'. In: I. Ajayi and M. Khan, eds, *External Debt and Capital Flight in Sub-Saharan Africa*, Washington, DC: IMF.

- Amin, A., 1998, *Cameroon's Fiscal Policy and Economic Growth*, AERC Research Paper No. 85, Nairobi: AERC.
- Asante, Y., 2000, *Determinants of Private Investment Behaviour*, AERC Research Paper No. 100, Nairobi: AERC.
- Biao, B. et al., 1999, *Endettement Extérieur et Développement Humain au Cameroun*, Collection Economie et Conflit, Yaoundé.
- Blejer, M. and M. Khan, 1984a, 'Private Investment in Developing Countries', *Finance and Development*, Vol. 21, pp. 26–9.
- Blejer, M. and M. Khan, 1984b, 'Government Policy and Private Investment in Developing Countries', *IMF Staff Papers*, Vol. 31, No. 2, pp. 379–403.
- Borensztein, E., 1991, 'Debt Overhang, Credit Rationing and Investment', *Journal of Development Economics*, Vol. 32, pp. 315–35.
- Claessens, S. et al., 1997, 'Analytical Aspects of the Debt Problem of Heavily Indebted Poor Countries'. In: I. Zubair and R. Kanbur, eds, *External Finance for Low-income Countries*, Washington, DC: IMF.
- Elbadawi, I., B. Ndulu and N. Ndung'u, 1997, 'Debt Overhang and Economic Growth in Sub-Saharan Africa'. In: I. Zubair and R. Kanbur, eds, *External Finance for Low-income Countries*, Washington, DC: IMF.
- Fosu, A., 1996, 'The Impact of External Debt on Economic Growth in Sub-Saharan Africa', *Journal of Economic Development*, Vol. 21, No. 1, pp. 93–118.
- Fosu, A., 1999, 'The External Debt and Economic Growth in the 1980s: Evidence from Sub-Saharan Africa', *Canadian Journal of Development Studies*, Vol. 20, No. 2, pp. 307–18.
- Friedman, I., 1983, *The Debt Dilemma: Managing Countries Risk*, Washington, DC: Council for International Bank Studies.
- Geiger, L., 1990, 'Debt and Economic Development in Latin America', *Journal of Developing Areas*, Vol. 24, No. 2, pp. 181–95.
- Greene, J. and M. Khan, 1990, *The African Debt Crisis*, Special Paper 3, Nairobi: AERC.
- Iyoha, M., 2000, 'External Debt and Economic Growth in Sub-Saharan African Countries: An Econometric Study'. In: I. Ajayi and M. Khan, eds, *External Debt and Capital Flight in Sub-Saharan Africa*, Washington, DC: IMF.
- Khan, M. and D. Villanueva, 1991, *Macroeconomic Policies and Long-term Growth*, AERC Special Paper 13, Nairobi: AERC.
- Klein, T., 1989, *External Debt Management: An Introduction*, Washington, DC: World Bank.
- Mbanga, G., 1994, 'The External Debt Situation of Cameroon (1970–90): Review and Analysis', unpublished doctoral thesis, University of Yaoundé, Yaoundé.
- Mbanga, G., 1996, 'The External Debt Burden and the Future of Africa', *African Journal of Economic Policy*, Vol. 3, No. 2.
- Mbanga, G., 2000, 'The Impact of Trade Liberalisation on the External Debt Burden of Cameroon', *African Review of Economics and Management*, Vol. 1, No. 2.
- Mbire, B. and M. Atingi, 1997, *Growth and Foreign Debt: The Ugandan Experience*, AERC Research Paper No. 66, Nairobi: AERC.
- Mjema, G.D., 1996, 'The Impact of Debt and Debt-Servicing in the Economy of Tanzania: A Simultaneous Equation Approach', *African Journal of Economic Policy*, Vol. 3, No. 1.
- Moshi, H.P. and A. Kilindo, 1999, *The Impact of Government Policy on Macroeconomic Variables: A Case Study of Private Investment in Tanzania*, AERC Research Report, Nairobi, AERC.

- Osei, B., 2000, 'Ghana: The Burden of Debt-Service Payment Under Structural Adjustment'. In: I. Ajayi and M. Khan, eds, *External Debt and Capital Flight in Sub-Saharan Africa*, Washington, DC: IMF.
- Ng'eno, N.K., 2000, 'The External Debt Problem of Kenya'. In: I. Ajayi and M. Khan, eds, *External Debt and Capital Flight in Sub-Saharan Africa*, Washington, DC: IMF.
- Tchoungui, R., Steve Gartlan, J.A. Mope Simo, Fondo Sikod, Augustin Youmbi, Michel Ndjatsana and James Winpenny, 1996, 'Case Study for Cameroon'. In: David Reed, ed., *Structural Adjustment, the Environment, and Sustainable Development*, London: Earthscan.
- Van Wijnbergen, S., 1991, 'Debt Relief and Economic Growth in Mexico', *World Bank Economic Review*, Vol. 5, No. 3, pp. 437–55.
- World Bank, *World Debt Tables* (various issues), Washington, DC: World Bank.
- World Bank, *Global Development Finance* (various issues), Washington, DC: World Bank.
- World Bank, 1995, *Cameroon: Diversity, Growth and Poverty Reduction*, Washington, DC: World Bank.

Fiscal Policy Coordination and Economic Performance: Cameroon Case Analysis with a CGE Model

Ernest Bamou

Introduction

Faced with a sharp fall in macroeconomic performance and production in the national economy in the early 1980s, Cameroon adopted in the mid/late 1980s a new strategy of economic development within the framework of Social Adjustment Programmes (SAP) in place of its previous import-substitution strategy. Gabon did the same. The objective of the SAP was to revamp national economies through efficient resource allocation. Despite the trade liberalization option in accordance with the first SAP in the African countries, it was not until the beginning of 1994 that a substantial reform in fiscal policy within the Regional Fiscal Reform Program (RFRP) in the Central African Customs and Economic Union (UDEAC) was noticed.¹ Later UDEAC was replaced by CEMAC.

Considering, on the one hand, that the budgets of Developing Countries (DCs) depend largely on fiscal revenue and, on the other, the importance of these budgets in the regulation of the productive systems of the countries, one can rightly pose the following questions: (i) will this reform guarantee a reasonable level of fiscal revenue to Cameroon?, and (ii) can it induce supply/demand and welfare effects in conformity with the macroeconomic objectives of the countries concerned?

The answers to the above questions suggest an analysis of the macroeconomic and sector repercussions of the reform in Cameroon as well as the coordination of trade policy within the CEMAC zone. For the purpose of comparison we take Cameroon and Gabon. This analysis is all the more necessary as existing literature has not clearly established the global macroeconomic and sector impact of fiscal reform measures (Loo and Tower 1990). The complexities of reallocations that follow such an intensive reform recommend an analysis of its repercussions within the micro-, meso- and macro-economic contexts. To this end, the computable general

equilibrium (CGE) model is the most appropriate. This approach is all the more appropriate as it makes it possible to attenuate the difficulties, mentioned by Shafaeddin (1994) and Collier et al. (1997), of disentangling the effects of fiscal reform from other economic policy influences.

This chapter proceeds as follows: we briefly describe the performance of Cameroon and Gabon, the CGE model is then specified, the results are presented and discussed, and recommendations offered.

Economic Performance in Cameroon and Gabon

From the early 1960s, Cameroon and Gabon went through a period of economic growth as a result of global stability in the terms of trade and rapid expansion in agricultural and oil exports, respectively. In Cameroon, the oil boom of the mid-1980s accelerated this growth. However, behind this good global economic performance lay great sector disparities.

In Cameroon, long before the oil boom of 1982, agriculture was the main economic activity, providing more than one-third of GDP and representing more than 90 per cent of total exports (FAO 1996). From 1982, the so-called 'Dutch Disease', which already characterized Gabon's economy, was also seen in Cameroon. There was stagnation in the industrial and agricultural sectors and a boom in the oil and services sectors, which until 1985 provided more than two-thirds of GDP. From 1985, there was a slight recovery in the primary and secondary non-oil sectors, thereby permitting Cameroon to barely escape this syndrome (as described by Benjamin and Devarajan (1985)). In Gabon, on the other hand, the syndrome was exacerbated. The first external shocks in the mid-1980s signalled the end of the boom period and the start of the economic crisis in these two countries.

Gabon's economy was in decline from 1986 as a result of the fall in the price of oil (almost 50 per cent), which constituted the country's main resource (85 per cent of exports in 1984) as well as the fall in exchange rate of the US dollar, the main currency in the payment of exports. Between 1985 and 1987, the Gabon government's oil revenue, by far the source of national revenue, fell by more than 80 per cent. This reduction also brought about a decline in public investment, and the labour sector was severely affected. Between 1985 and 1992, there was a reduction of 25 per cent and about 50 per cent in employment in the public and modern private sectors, respectively.

In Cameroon, as from 1985/86, the economy was faced with several simultaneous negative external shocks. While world prices of its main exports (oil, coffee and cocoa) were falling, the US dollar (again the main exports payment currency) depreciated by almost 40 per cent between 1985 and 1988. Between 1985 and 1987, the export price indexes for oil, cocoa, coffee and rubber (almost 80 per cent of total exports during this period) fell respectively by 65, 24, 11 and 20 per cent, resulting in a 47 per cent deterioration in the global terms of exchange. This gave rise to a drastic worsening of the balance of payments, which went from a surplus of 4.4 per cent of GDP in 1984/85 to a deficit of 8.8 per cent in 1986/87. During

this period GDP fell by 4.5 per cent, and for the first time since 1976/77, the government was faced with a budget deficit that reached 2.7 billion CFA francs in 1985/86 (Blandford et al. 1995).

Between 1989/90 and 1993/94, there was a slowdown of the reduction in production activity and a growth recovery in 1994/95. Thanks to sustained agricultural and oil exports, the trade balance showed a clear improvement during 1994/95. The growth in trade balance surplus, however, did not prevent the continued deterioration of the balance of payments. In Gabon, despite the persistent signs of economic crisis (budget imbalance, balance of payments deficit, increase in external debt and reduction in final consumption), some indicators (real GDP, trade balance surplus, fiscal revenue) showed a relative economic recovery in 1994 but the pre-crisis level was still not attained (Bamou 1999).

The absence of data necessary for the evaluation of the impact of the 1994 fiscal reform proposed, which is our main concern, suggests recourse to the CGE modelling approach, which is capable of providing an ex-ante evaluation of the reform as well as alternative measures.

The Model

Our model is particularly inspired by experiments developed by Martin et al. (1993). We incorporated in this available methodological framework developments made by Harris (1985), Rutherford et al. (1994) and Njinkeu and Bamou (2000). Five main hypotheses are implicit in these models: (i) there exists pure and perfect competition in the market; (ii) the sector's supply of capital is fixed; (iii) Cameroon and Gabon are 'price-takers' on the international scene; (iv) there is an underemployment of labour, and (v) there is a heterogeneity of production sectors. The specificity of our model resides in the treatment of the fiscal system as a consequence of amendments introduced by the 1994 fiscal reform. The treatment of the external markets, the specification of the production system and the macroeconomic closure roles also constitute the original approach of our model.

Main Structure of the Model

Our CGE model is made up of five main blocs (production, income/savings, demand, price, and equilibria). In the production bloc, the sectors are produced by combining primary factors and intermediate inputs in a two-level procedure. Products sold on markets are then distinguished from sector production. In the demand bloc, the distinguishing of the CEMAC market as a second external market for local economic operators gives rise to a special modelling of demand of domestically produced and composite products. A two-level constant elasticity transformation function, following the approach of Njinkeu and Bamou (2000), permits us to distinguish the products produced and sold locally from those exported to the CEMAC zone and the rest of the world (ROW). In like manner, a two-level constant elasticity substitution function makes it possible for us to obtain the Armington demand for composite products.

In the income/savings bloc, households receive the larger part of salaries while a small part is paid to the CEMAC countries as salaries for border workers. The capital revenue is distributed between local agents who are owners of the capital invested in the production activities. The agents save after paying taxes, consuming and making transfers. The sum of savings is used to finance global investment. The complete specification and the list of variables and parameters of the model are respectively given in Tables 18A.1 and 18A.2 in the Appendix.

Specific Features of the Model

In preceding CGE models constructed for CEMAC countries, the level of revenue from indirect taxes and custom duties were generally considered to be endogenous. The tariff rates were then exogenous and governments could manage their levels to attain their fiscal objectives. The implicit hypothesis is therefore made that government has the latitude to determine the levels of each of the multiple tax rates at its disposal. As a result of the 1994 fiscal reform, the limited number and low flexibility of the new indirect taxes and customs duties instruments forced the government to consider these parameters as fiscal objectives. Thus, indirect tax revenues are decomposed according to their origin. That decomposition gave us the opportunity to use tax rates as endogenous variables in the model as well as exogenous variables.

This new formulation of the tariffs and indirect tax system affects significantly the prices of products sold within the CEMAC zone. In order to take into account the deduction of the turnover tax on intermediary consumption, an exempt TCA price of composite products has been considered to valorize intermediary consumption in the determination of the sector's value-added prices. The value of this deducted turnover tax reduces government fiscal revenue, thereby reducing available resources. Concerning the macroeconomic closure conditions on the labour market, the practice of work contracts and guaranteed minimum wage would suggest that salaries are rigid in the short term. In practice, this rigidity is conveyed by a personnel reduction during periods of economic recession and massive recruitments in case of revival (for example, Cameroon's public service, the country's main employer). In this context, salary adjustment is used only in the medium or long term. This short-term rigidity of salaries is expressed in the model by unemployment equilibrium where a variation in the labour demand is conveyed by a modification of the unemployment rate. The total labour supply and salary rates are thus fixed and the endogenous rate of unemployment plays the role of an equilibrium factor of the labour market.

In the light of the fiscal objectives of governments and taking into account the new constraints introduced by the low flexibility of the new fiscal instruments (TCA, TSP, TDA and TPG), the new tax rates are, in the first instance, considered as parameters and fiscal revenue as endogenous variables. This allows us to simulate the ranges offered by the reform and to appreciate and compare the levels of fiscal revenue generated as well as their impact on the economic performance and welfare of the population of Cameroon and Gabon. In the second instance, fiscal revenue

is considered to be exogenous and tariff rates are taken to be endogenous variables. This closure allows us to simulate alternative fiscal objectives for the two governments and to compare the tariff rates thus generated to those imposed by the reform. At this point, an analysis of coherence in the coordination of economic policies within the CEMAC zone is undertaken.

The governments of Cameroon and Gabon cannot borrow indefinitely to finance their development. To avoid the financing of investment through increased foreign indebtedness, we have chosen to set each country's global trade balance at its initial level. To this end, regional trade balances (with CEMAC and the ROW) adjust themselves to balance the foreign market. With such a closure, the welfare depicted in our model is specific to the generation under analysis and not the one borrowed from the future generation through indebtedness. The general consumer price index is used as *numéraire* in the model. Public expenditure is exogenous and government savings are endogenous to allow for an adjustment in budget expenditure on government revenue as recommended by the restrictive policies prescribed in the SAPs in place in the two countries.

In order to be able to observe the effects of the reform on resource allocations, a welfare variation model is added to the CGE model constructed.² The compensating variation (CV) and equivalent variation (EV) defined by Hicks (1956), associated with the development of purchasing power suggested by Hicks (1946) and Harberger (1971) inspire it. The indirect utility function associated with the Cobb–Douglas demand function type deriving from the household consumption function in the above CGE model is widely used in the specification of this welfare variation model (see equations from b1 to b6 in Table 18A.1).

Data and Base Solution

Since we are concerned with a comparative analysis of the trade liberalization impacts on Cameroon and Gabon's economic performances and welfare of the populations, two appropriate social accounting matrixes (SAMs), with the same structure, are constructed for the calibration matter. Each of these SAMs comprises a total of 42 accounts divided as follows: two factor production accounts (labour and capital); five agent accounts; three production sector accounts; 29 product accounts (with five locals and 13 imported, with seven imported from CEMAC countries and six imported from the ROW); three composite products and eight exported (with four exported to the other CEMAC member states and four exported to the ROW). An accumulation account registers the different savings and investments of the economies and two passage accounts allow us to register fiscal revenues in line. The total receipt of these accounts is reversed in columns to the government account. Products are distinguished according to their origin and destination (local, imported or exported) as well as their zone of origin or destination (CEMAC and ROW). Insofar as consumer demand is an Armington aggregate, a composite product is determined.

The model was simulated for the base run, and it was found that the base solution of the model replicated the database of the two countries as required.

Scenarios and Results Analysis

Six scenarios have been simulated: (i) the fiscal reform proposed in the CEMAC RFRP (Scenario 1); (ii) the neutrality of fiscal revenue (Scenario 2); (iii) Scenario 2, with the cancellation of the General Preferential Tariff (Scenario 3); (iv) Scenario 3, with a 10 per cent increase of the sum of indirect fiscal revenue (Scenario 4); (v) Scenario 4, with the use of revenue generated from increased indirect taxes to augment government transfers to the ROW (Scenario 5); and (iv) Scenario 4, with the use of revenue generated from increased indirect taxes to augment government final consumption (Scenario 6). From the figures summarizing the results of scenarios in Tables 18A.3 and 18A.4, it may be concluded that, in Cameroon, the application of the reform (Scenario 1) results in increased indirect fiscal revenue. This increase is a result of the hike in tax revenue from local products sold locally, which increase has more than compensated for the reduction in import/export taxes. This shift of fiscal pressure from international trade to local products sold locally is in keeping with the theoretical results expected from the application of the TCA.

Increased fiscal pressure on local products results in a slight reduction in global production following reduced global demand. This slight reduction in production is the result of increased production in the services sector, which slightly compensates for reductions in the agricultural and industrial sectors. Increased supply of exports resulting from higher producer prices paid is, however, not significant enough to compensate for the reduced production brought about by lower domestic demand. Salary rates being hypothetically fixed, producers react to reduced production by lowering their demand for labour. This reduction in labour demand worsens unemployment. Since government consumption is hypothetically fixed, the accumulated revenue generated by increased total fiscal revenue is translated by a significant reduction of the budget deficit. This increase in revenue translates into increased government savings or a reduced budget deficit.

On the international scene, the reform constitutes a significant reduction of fiscal pressure on imports from the two zones. However, the higher reduction of the ROW imports results in a shift in demand from CEMAC imports as well as local products to the ROW imports. The increase in the balance account deficit with the ROW is thus financed by the increased balance account surplus with CEMAC. The phenomenon of reduced imports and increased exports from CEMAC reinforces the 'hub-and-spoke' character of trade between Cameroon and CEMAC. The reduction of labour demand leading to a reduction in salaries paid out, and of capital remuneration in the agriculture and industrial sectors, which register reduced activity, also leads to a reduction in household revenue. The more than proportionate reduction in the demand for local products as against the increase in demand for imports results in reduced household final consumption. This reduction in revenue as well as in consumption leads to a serious deterioration in the welfare of households. The highly reduced budget deficit has more than compensated for the reduced household and firm savings, and given rise to increased global savings, which in turn has financed increased global investment.

In Gabon, apart from the fact that a shift in fiscal pressure from international to domestic trade has not been registered, Scenario 1 has different effects on the above-mentioned aggregates. Because of the reduced indirect fiscal revenue, the government moves from a surplus to a deficit budget. Contrary to Cameroon, the application of the reform leads to a reduced rate of indirect tax pressure in Gabon. This high tax reduction on both the local and foreign markets fosters demand, the excess of which is compensated for by increased production sustained by a significant increase in labour demand, which is translated by a significant reduction in unemployment rate. The joint positive production and fiscal effects result in a significant increase in household welfare.

Despite the indirect fiscal neutrality constraint introduced in Scenario 2, the shift in fiscal pressure from international to domestic markets has led to the negative effects already noted in the Cameroonian economy in Scenario 1. Four major remarks can, however, be made: (i) the TCA rates generated are inferior to the minimum rates required by the UDEAC proposed fiscal reform, and in addition, the general TCA rate is even lower than the reduced rate proposed; (ii) the negative effects observed on the economy are higher; (iii) the lower direct fiscal revenue arising from reduced production activities leads to reduced global government revenue, which in turn results in increased budget deficit; and (iv) since the sum of indirect tax revenue is fixed, the reduction in production has resulted in a reduction in GDP at current prices. However, in Gabon, the TCA rates generated are higher than the maximum proposed by the reform. The transfer of the pressure of indirect taxes from international to domestic trade has still not been established. There has been increased pressure both on imports as well as on local products sold locally. However, both reductions and augmentations in fiscal pressure have been registered on different sector products.

Gabon's domestic fiscal system for the base year consists of high fiscal exonerations and subventions on the products of certain sectors (industrial products subject to reduced TCA rates and subsistence agriculture), and high pressure on others (perennial agricultural products and industrial products subject to normal TCA rates). The implementation of the reform coupled with an insistence on fiscal neutrality results in increased fiscal pressure on the first group of products and reduced pressure on those of the last group. With higher taxes resulting in higher product prices, a lower demand is registered, thereby affecting production and import levels. The double reduction in the prices of local products subject to lower taxes as well as their imported substitutes results in an increased demand for both local products and imports. However, deterioration in the relative prices within local and imported products is noted to the detriment of imported products, resulting in a more than proportionate increase in the demand for local products as compared to imported ones. The increased production of these products being higher than the reduction registered in the other sectors, we note an increase in total production. This increase is all the more significant, as the sectors registering increased production constitute almost 80 per cent of total production. The positive production effect is sustained by increased labour demand and therefore a significant reduction in unemployment.

Because of the higher percentage of products registering a price increase in household final consumption, the positive revenue effect is not enough to offset the negative price effect. This results in a slight reduction in household welfare. The increase in direct fiscal revenue, derived from higher production, has led to increased government revenue and budget surplus. The results observed in Scenario 3 reveal a certain number of contradictions in relation to some conclusions found in the literature. It is generally admitted in the literature that intra-regional trade within Sub-Saharan economic groups will always be low even if the constraints on it are removed (Foroutan and Pritchett 1993). Contrary to this argument, the suppression of the tax on intra-regional imports fulfilling the 'conditions of origin' in conjunction with the constraints of the indirect fiscal neutrality of the reform, have given rise to a significant increase in Cameroon and Gabon's intra-regional trade. Exports and imports have increased respectively by 13 and 11 per cent for Cameroon and by 3 and 36 per cent for Gabon. But the new indirect fiscal structure accentuates the hub-and-spoke character of Cameroon's trade with other CEMAC member states.

Regarding Scenario 2, it may be noted that, as theoretically expected, the positive effect resulting from the suppression of intra-regional import taxes has affected the productive system and, indirectly, the welfare of Cameroonian households.³ This explains the relative reduction in production as well as a relative increase in unemployment in the two countries. The reduced prices of CEMAC products fulfilling the 'conditions of origin' have given rise to a shift in demand from local substitutes to imported products. The positive price effects thus engendered, however, have not been strong enough to offset the negative revenue effects. The result has been a relative deterioration in the welfare of the two countries' households.

The main observation that can be made from these first three scenarios is that, in Cameroon, contrary to Gabon, the effects registered have been realized within the constraints imposed by the UDEAC RFRP on indirect fiscal instruments. The TCA rates generated for Cameroon remain within the range and even below the minimum rates authorized, while in Gabon they are much higher than the authorized maximum (see Table 18A.4).

In Cameroon, Scenario 4 produces the same production and fiscal effects as Scenario 1. In Gabon, these effects are similar to those of Scenario 2. They are, however, amplified when it comes to welfare. The increase in the sum of indirect fiscal revenue leads to higher fiscal pressure on products sold on all the markets. This higher pressure translates into greater negative price effects, which are not compensated for by the positive revenue effects engendered by the production sector. This results in further deterioration in household welfare. With Scenario 4, Gabon departs even further from the TCA limits proposed by the reform. Scenario 5 increases Cameroon's budget deficit and reduces Gabon's surplus, whereas Scenario 6 reduces Cameroon's budget deficit and reduces Gabon's surplus to a lesser proportion than in Scenario 5. The positive production results brought about by Scenario 6 are so high that we observe a significant relative improvement in the welfare of the two countries' populations. In this Scenario 6, the almost 13 and 73 percent

reduction in unemployment rates in Cameroon and Gabon, respectively, reveal economic revival in both countries. Better still, in Cameroon, this revival remains compatible with the indirect fiscal constraints imposed by the reform as shown in the TCA rates generated and reproduced in Table 18A.4. However, the increased deficit and reduced budget surplus poses the problem of a deficit level compatible with sustainable growth.

Conclusions and Policy Implications

The questions asked were whether the fiscal reform proposed to CEMAC countries could guarantee a reasonable level of fiscal revenue and induce supply/demand effects in conformity with the macroeconomic objectives of the countries of Cameroon and Gabon. The scenario results show that, because of the high economic structure disparities of the two economies analysed, the reform effects on these economies are contradictory. In Cameroon, we observed the realization of fiscal revenue objectives within the limits of the constraints imposed by the reform, and in Gabon, a reduction in indirect fiscal revenue under the same constraints. However, in Cameroon, the realization of the fiscal revenue objective is obtained to the detriment of production and the population's welfare objectives. Nevertheless, the use of revenue generated to increase public final consumption compensates for the negative effects on household welfare. On the other hand, the reduction in indirect fiscal revenue in Gabon is compensated for by a positive reaction in the production sectors, thus leading to an improvement in population welfare.

In like manner, it is observed that while Cameroon improved its level of indirect fiscal revenue by respecting the constraints on fiscal instruments imposed by the reform, Gabon could only apply much higher rates to conserve its initial level of the same revenue. Since this country is not faced with a budget deficit problem, there is no serious reason why it cannot apply the reform as Cameroon has done. This reform is all the more to be recommended for Gabon as it has positive welfare effects on its population. This study thus shows, on the one hand, that an economic recovery through public spending financed by increased fiscal pressure is possible in Cameroon as well as in Gabon, and, on the other hand, that the coordination of fiscal policy between Cameroon and Gabon is not possible without a harmonization of their macroeconomic objectives.

Notes

- 1 The fiscal structure of Cameroon and Gabon comprises about twenty different taxes applicable selectively to import and export products at rates sometimes reaching 150 per cent of the cost, insurance and frets value (c.i.f.) (Bamou 1999–). With the coming of fiscal reform, internal indirect taxes were replaced by the Turnover Tax (TCA), and the import taxes were aggregated in two tariff positions: (i) the External Common Tariff (TEC), comprising customs duty (DD), excise tax (DA) and a temporary surtax (TS); (ii) the Turnover Tax (TCA), which is an aggregate of the import c.i.f. value to which the other taxes have been added. The TEC comprises the former custom and entry duties.

The TCA replaced the former import turnover tax (TCAI) and the complementary tax (TC). The TCA on local products sold locally replaced the former internal production tax (TIP), the unique local tax (TUL), the internal consumption tax (TIC), the transaction tax (TT), internal turnover tax (ICAI) and proportional stamp duty (DTP). It is applied at a zero rate to products exempt and at reduced and normal rates of 8 and 17 per cent, respectively, for the others. The TCA is deductible. A temporary surcharge (ST) as well as an excise tax (DA), respectively 25 and 30 per cent of the c.i.f. value, can also be levied on a limited number of products to reduce the harmful effects of instituting the reform. The unique tax (TU) applied to all inter-regional trade was replaced by a generalized preferential tariff (TPG), which was a proportion of the custom duty (DD) of the TEC applicable on similar products. The export taxes remained unchanged and their application left to the discretion of each CEMAC country. The union was transformed into CEMAC (Central African Economic and Monetary Community) in 1998.

- 2 It has been shown in the literature that gains relative to GDP shown in the CGE models are relatively low and that of the production of sectors, resource reallocation and trade repercussions are generally higher (Robinson 1990).
- 3 See Dursilla and Stern (1989) for a better description of the mechanisms.

References

- Bamou, E., 1999, *Trade Liberalization and Economic Performance of Cameroon and Gabon: A Comparative Analysis with a CGE Model*, AERC Research Paper No. 97, Nairobi: AERC.
- Benjamin, N. and S. Devarajan, 1985, *Oil Revenues and Economic Policy in Cameroon: Results From a Computable General Equilibrium Model*, Working Papers No. 745, Washington, DC: World Bank.
- Blandford, D., D. Friedman, S. Lynch, N. Mukherjee and D.E. Sahn, 1995, 'Oil Boom and Bust: The Harsh Realities of Adjustment in Cameroon'. In: D.E. Sahn, ed., *Adjusting to Policy Failure in African Economies*, Cornell: Cornell University Press.
- Collier, P., D. Greenaway and J.W. Gunning, 1997, 'Evaluating Trade Liberalization: A Methodological Framework'. In: A. Oyejide, I. Elbadawi and P. Collier, eds, *Regional Integration and Trade Liberalization in Sub-Saharan Africa*, Vol. 1: *Framework, Issues and Methodological Perspectives*, London: Macmillian Press.
- Dursilla, K.B. and R.M. Stern, 1989, 'Computable General Equilibrium Estimates of the Gains from US-Canadian Trade Liberalization'. In: D. Greenaway, T. Hyclak and R.J. Thornton, *Economic Aspects of Regional Trading Arrangements*, Hassocks: Harvester Press.
- Food and Agricultural Organization (FAO), 1995, *Analyse de l'Impact de la Dévaluation du Franc C.F.A. sur la Production Agricole et la Sécurité Alimentaire et Proposition d'Action: Cameroun*, Rapport Technique, No. TCP/CMR/3452(A), Rome: FAO.
- Foroutan, F. and L. Pritchett, 1993, *Intra-Sub-Saharan African Trade: Is It Too Little?*, mimeo, Washington, DC: World Bank.
- Harberger, A.C., 1971, 'Three Basic Postulates for Applied Welfare Economics: An Interpretative Essay', *Journal of Economic Literature*, Vol. 9, pp. 785-97.
- Harris, R.G., 1985, 'Summary of a Project on the General Equilibrium Evaluation of Canadian Trade Policy'. In: J. Whalley and R. Hill, eds, *Canada-United States Free Trade*, Toronto: University of Toronto Press.
- Hicks, J.R., 1946, *Value and Capital*, 2nd edn, Oxford: Oxford University Press.

- Hicks, J.R., 1956, *A Revision of Demand Theory*, Oxford: Oxford University Press.
- Loo, T. et Tower, 1990, 'Libéralisation Agricole, Bien-être, Recettes Publiques et Alimentation dans les Pays en Développement'. In: Ian Goldin et Odin Knudsen, eds, *Libéralisation des Echanges Agricoles: Implications pour les Pays en Développement*, Paris and Washington, DC: OCDE and World Bank.
- Martin, M.C., B. Decaluwé et M. Soussi, 1993, *Modèles Calculables d'Equilibre Général: Les Aspects Réels*, GREPE, Université Laval.
- Njinkeu, D. and E. Bamou, 2000, *Trade and Exchange Rate Policy Options for the CFA Countries: Simulation with a CGE Model for Cameroon*, AERC Research Paper No. 96, Nairobi: AERC.
- Robinson, S., 1990, 'L'Analyse de la Libéralisation des Echanges Agricoles à l'Aide de MEGC sur un Seul Pays'. In: Ian Goldin et Odin Knudsen, eds, *Libéralisation des Echanges Agricoles: Implications pour les Pays en Développement*, Paris and Washington, DC: OCDE and World Bank.
- Rutherford, T., E.E. Rutström et D. Tarr, 1994, 'L'Accord de Libre-échange entre le Maroc et la CEE: Une Evaluation Quantitative', *Revue d'Economie du Développement*, No. 2, pp. 97–133.
- Shafaeddin, S.M., 1994, *The Impact of Trade Liberalization on Export and GDP Growth in Least Developed Countries*, UNCTAD Discussion Papers No. 85, Geneva: UNCTAD.

Appendix

Table 18A.1: The Complete Specification of the Model

Sets Definition

i	∈	I = {AGR,IND,BRNM}	production sectors
j	∈	J = {PAGS,PAGP,PITR,PITN,SNM}	local goods and services
m	∈	M= {PAGS,PAGP,PITR,PITN,PITD,PITE}	imported products;
u	∈	U = {PITU}	product subject to the unique tax;
n	∈	N = {PAGS,PAGP,PITR,PITN}	exported products;
s	∈	S = {SNM}	non-tradable product
a	∈	A = {PAGS,PAGP}	agricultural products
b	∈	B = {PITR,PITN,PITD,PITE}	industrial products
z	∈	Z = {CEMAC,RDM}	the two external markets
k	∈	K = {PITR,PITN,PITD}	industrial import products from CEMAC subject to TCA
p	∈	P = {PAGR,PIND,SNM}	sector's goods and services
q	∈	Q = {PAGR,PIND}	composite tradable products
il	∈	IL= {PITR,PITN}	industrial products sold locally and exported
iu	∈	IU= {PITR,PITN,PITD,PITE,PITU}	industrial import products from CEMAC
PAGR = PAGS + PAGP agricultural product			
PIND = PITR + PITN + PITD + PITE + PITU industrial product			

Production Bloc

- (1) $VA_i = A_i \cdot L_i^{D_{01}} \cdot K_i^{(1-\alpha_i)}$
- (2) $CI_i = io_i \cdot VA_i / v_i$
- (3) $XS_i = CI_i / io_i$

Table 18A.1: to be continued

$$(4) \quad CIJ_{it} = a_{it} \cdot CI_{it}$$

$$(5) \quad L_{it}^D = \alpha_{it} \cdot PVA_{it} \cdot VA_{it} / w$$

$$(6) \quad XP_{it} = \sum_j \beta_{it}^j \cdot XS_{it}$$

Revenue-savings Bloc

$$(7) \quad YM = w \cdot \lambda_{it}^M \cdot \sum_i L_{it}^D + \lambda_{it}^M \cdot \sum_i RK_{it} + DIM + TGM \cdot Pindex$$

$$(8) \quad DIM = tdi_{it} (YS - trk_{it} \cdot \sum_i RK_{it})$$

$$(9) \quad YDM = (1 - tym) \cdot YM - TMS - TMR$$

$$(10) \quad TAXD = [td_{it} + tda_{it} + tpd_{it} + (1 + td_{it} + tda_{it} + tpd_{it}) \cdot tca_{it}] \cdot PD_{it} \cdot D_{it}$$

$$(11) \quad YG = tym \cdot YM + [1 - (\lambda_{it}^M + \lambda_{it}^S)] \cdot \sum_i RK_{it} + TAXP \\ + trk_{it} \cdot \lambda_{it}^S \cdot \sum_i RK_{it} + \sum_j TAXD_{it} + \sum_m \sum_x TAXM_{m,x}$$

$$(12) \quad ANT_{m,x} = tm_{m,x} \cdot e \cdot PWM_{m,x} \cdot M_{m,x}$$

$$(13) \quad DDD_{m,x} = tdd_{m,x} \cdot e \cdot PWM_{m,x} \cdot M_{m,x}$$

$$(14) \quad TDA_{m,x} = tda_{m,x} \cdot e \cdot PWM_{m,x} \cdot M_{m,x}$$

$$(15) \quad STP_{m,x} = tsp_{m,x} \cdot e \cdot PWM_{m,x} \cdot M_{m,x}$$

$$(16) \quad TAXE_{it} = \frac{e \cdot PWE_{it} \cdot EX_{it}}{(1 + tpe_{it} + tpe_{it}^*)}$$

$$(17) \quad YS = \lambda_{it}^S \cdot \sum_i KR_{it} + (TMS + TGS) \cdot Pindex + e \cdot TR_{it} \cdot S$$

$$(18) \quad RK_{it} = PVA_{it} \cdot VA_{it} - w \cdot L_{it}^D$$

$$(19) \quad TAXP = \sum_j tpd_{it} \cdot PP_{it} \cdot \beta_{it}^j \cdot XP_{it} + \sum_x TAXE_{m,x} + e \cdot TR_{it} \cdot G - \sum_x RTCACI_{it} \\ + \sum_x \sum_j tpe_{m,x} \cdot PP_{it} \cdot \beta_{it}^j \cdot XP_{it}$$

$$(20) \quad TCA_{m,x} = (1 + tdd_{m,x} + tda_{m,x} + tsp_{m,x}) \cdot tca_{m,x} \cdot e \cdot PWM_{m,x} \cdot M_{m,x}$$

$$(21) \quad TAXM_{m,x} = ANT_{m,x} + DDD_{m,x} + TDA_{m,x} + STP_{m,x} + TCA_{m,x}$$

$$(22) \quad RTCACI_{it} = \sum_j CIJ_{it} \cdot (PC_{it} - PCHT_{it})$$

$$(23) \quad SS = YS - [DIM + trk_{it} \cdot \lambda_{it}^S \cdot \sum_i RK_{it} + (TSM + TSR) \cdot Pindex]$$

$$(24) \quad SM = pms \cdot YDM$$

Demand bloc

$$(25) \quad CG = YG - (TGM \cdot Pindex + TGR + SG)$$

$$(26) \quad CM = YDM - SM$$

$$(27) \quad Q_{it} = B_{it}^M \cdot I_{it} \cdot \delta_{it}^q \cdot MC_{it}^q + (1 - \delta_{it}^q) \cdot DC_{it}^q \cdot J^{(W, P, I)}$$

$$(28) \quad Q_{it} = D_{it}$$

$$(29) \quad \frac{MC_{it}^q}{DC_{it}^q} = [\frac{PDC_{it}^q}{PMC_{it}^q} \cdot \frac{\delta_{it}^q}{1 - \delta_{it}^q}]^{1/\theta^q}; \quad \sigma_{it}^q = \frac{1}{1 - \rho_{it}^q}$$

$$(30) \quad PC_{it} \cdot C_{it} = \beta_{it}^C \cdot CM + \beta_{it}^G \cdot CG$$

$$(31) \quad MC_{it}^q = B_{it}^M \cdot [\delta_{it}^q \cdot UMC_{it}^q + (1 - \delta_{it}^q) \cdot RMC_{it}^q]^{1/\theta^q}$$

$$(32) \quad MC_{ind} = \sum_i UM_{it} + \sum_x RM_{it}$$

$$(33) \quad MC_{ind} = \sum_i (UM_{it} + RM_{it})$$

$$(34) \quad PC_{it} \cdot INV_{it} = \beta_{it}^I \cdot IT$$

$$(35) \quad \frac{UMC_{it}^q}{RMC_{it}^q} = [\frac{PMUC_{it}^q}{PMRC_{it}^q} \cdot \frac{\delta_{it}^q}{1 - \delta_{it}^q}]^{1/\theta^q}; \quad \sigma_{it}^q = \frac{1}{1 - \rho_{it}^q}$$

Table 18A.1: to be continued

- $$\begin{aligned}
 (36) \quad & UM_s = \lambda_s^U UMC_{PAGR} \\
 (37) \quad & UM_b = \lambda_b^U UMC_{PIND} \\
 (38) \quad & UM_u = (1 - \sum_b \lambda_b^U) \cdot UMC_{PIND} \\
 (39) \quad & DINT_i = \sum_p a_p \cdot CI_i \\
 (40) \quad & XS_q = B_q^X \cdot [\gamma_q \cdot EXC_q^{vq} + (1 - \gamma_q) \cdot DC_q^{vq}]^{(1/v_q)} \\
 (41) \quad & XS_s = DC_s = D_s \\
 (42) \quad & \frac{EXC_q}{DC_q} = \left[\frac{PEC_q}{PDC_q} \cdot \frac{1 - \gamma_q}{\gamma_q} \right]^{q_q^E}; \quad \sigma_q^E = \frac{1}{(\gamma_q - 1)} \\
 (43) \quad & EXC_q = B_q^{IX} \cdot [\gamma_q^I \cdot EXUC_q^{vq} + (1 - \gamma_q^I) \cdot EXRC_q^{vq}]^{(1/v_q^I)} \\
 (44) \quad & \frac{EXUC_q}{EXRC_q} = \left[\frac{PEUC_q}{PERC_q} \cdot \frac{1 - \gamma_q^I}{\gamma_q^I} \right]^{q_q^{IE}}; \quad \sigma_q^{IE} = \frac{1}{(\gamma_q^I - 1)} \\
 (45) \quad & EXU_n = \lambda_{n,q}^{XU} EXUC_q \\
 (46) \quad & EXR_n = \lambda_{n,q}^{XR} EXRC_q \\
 (47) \quad & RM_s = \lambda_s^R RMC_{PAGR} \\
 (48) \quad & RM_b = \lambda_b^R RMC_{PIND} \\
 (49) \quad & DC_{PAGR} = \sum_s D_s \\
 (50) \quad & DC_{PIND} = \sum_b D_b
 \end{aligned}$$

Prices Bloc

- $$\begin{aligned}
 (52) \quad & PVA_i = (P_i \cdot XS_i - \sum_p PCHT_{ip} \cdot CIJ_{ip}) / VA_i \\
 (53) \quad & PP_n = (PD_n \cdot D_n + PE_n \cdot EX_n) / XP_n \\
 (53) \quad & P_i = \sum_j PP_j \cdot XP_j / XS_i \\
 (54) \quad & PP_s = PD_s \\
 (55) \quad & PEU_n = \frac{PWE_n}{1 + teu_n + tpeu_n} \\
 (56) \quad & PMC_q \cdot MC_q = PMUC_q \cdot UMC_q + PMRC_q \cdot RMC_q \\
 (57) \quad & PMUC_{PAGR} \cdot UMC_{PAGR} = \sum_s PMU_s \cdot UM_s \\
 (58) \quad & PER_n = \frac{e \cdot PWE_n}{1 + ter_n + tper_n} \\
 (59) \quad & PCHT_p = \frac{PDCHT_p \cdot DC_p + PMCHT_p \cdot MC_p}{Q_p} \\
 (60) \quad & PEC_q \cdot EXC_q = PEUC_q \cdot EXUC_q + PERC_q \cdot EXRC_q \\
 (61) \quad & PC_q = (PDC_q \cdot DC_q + PMC_q \cdot MC_q) / Q_q \\
 (62) \quad & PC_s = PDM_s \cdot D_s / Q_s \\
 (63) \quad & PMRC_{PAGR} \cdot RMC_{PAGR} = \sum_s PMR_s \cdot RM_s \\
 (64) \quad & PMRC_{PIND} = \frac{\sum_b PMR_b \cdot RM_b}{RMC_{PIND}}
 \end{aligned}$$

Table 18A.1: to be continued

- $$(65) \quad PDM_j = PD_j \cdot [td_j + tpd_j + tda_j + (1 + td_j + tpd_j + tda_j) \cdot tca_j]$$
- $$(66) \quad PDC_{PAGR} = \frac{\sum_s PDM_s \cdot D_s}{DC_{PAGR}}$$
- $$(67) \quad PDC_{PIND} = \frac{\sum_{ii} PDM_{ii} \cdot D_{ii}}{DC_{PIND}}$$
- $$(68) \quad PMUC_{PIND} = \frac{\sum_{uu} PMU_{uu} \cdot UM_{uu}}{UMC_{PIND}}$$
- $$(69) \quad PMU_m = PWM_m \cdot [(tm_m + tdd_m + tda_m + tsp_m) + (1 + tdd_m + tda_m + tsp_m) \cdot tca_m]$$
- $$(70) \quad PEUC_{PAGR} = \frac{\sum_s PEU_s \cdot EXU_s}{EXUC_{PAGR}}$$
- $$(71) \quad PEUC_{PIND} = \frac{\sum_{ii} PEU_{ii} \cdot EXU_{ii}}{EXUC_{PIND}}$$
- $$(72) \quad PMR_m = e \cdot PWM_m \cdot [(tm_m + tdd_m + tda_m + tsp_m) + (1 + tdd_m + tda_m + tsp_m) \cdot tca_m]$$
- $$(73) \quad PMUHT_m = PMRHT_m = e \cdot PWM_m \cdot (1 + tdd_m + tda_m + tsp_m)$$
- $$(74) \quad PDMHT_i = PD_i \cdot (1 + tda_i + tpd_i)$$
- $$(75) \quad Pindex = \sum_i \beta_i^c \cdot PC_i$$

Equilibria Bloc

- $$(76) \quad IT = SS + SM + SG + e \cdot BC$$
- $$(77) \quad BCU = (1 - \lambda_i^u) \cdot w \cdot \sum_i LD_i + PWM_u \cdot UM_u + \sum_s PWM_s \cdot UM_s - \sum_s PWE_s \cdot EXU_s$$
- $$(78) \quad BCR = (\sum_m PWM_m \cdot RM_m) + 1/e \cdot (TGR + TSR + TMR) - (\sum_s (PWE_s \cdot EXR_s) + TRG + TRM + TRS)$$
- $$(79) \quad Léon = Q_s - C_s - DINT_s - INV_s$$
- $$(80) \quad Q_s = C_s + DINT_s + INV_s$$
- $$(81) \quad (1 - tch) \cdot L^s = \sum_i L_i^D$$
- $$(82) \quad BC = \frac{BCU}{e} + BCR$$

Welfare Variation Model

- $$(b1) \quad CV_p = [(U_p - UO_p) / U_p] \cdot YM_p$$
- $$(b2) \quad EV_p = [(U_p - UO_p) / UO_p] \cdot YMO$$
- $$(b3) \quad U_p = \sum_j \left(\frac{\beta_{jp} \cdot CM_p}{PC_{jp}} \right)^{\beta_{jp}}$$
- $$(b4) \quad H_p^* = 1/2 \cdot (CV_p + EV_p)$$

Source: author's calculations.

Table 18A.2: List of Variables and Parameters of the Model

<i>Endogenous Variables</i>	
ANT _{m,z} :	former taxes on imports
BCR:	current account with the rest of the world (ROW)
BCU:	current account with other CEMAC countries
C _i :	final consumption of goods
CI _i :	total sector's intermediate consumption
CIJ _{ip} :	sector's intermediate consumption
CM:	household total consumption
D _i :	domestic sales
DC _q :	domestic sales of composite goods
DDD _{m,z} :	custom duty revenues
DIM:	dividends received by household
DINT _i :	intermediate demand of goods
EXC _q :	total composite exports
EXUC _q :	total composite exports to the CEMAC zone
EXRC _q :	total composite exports to the RDM zone
EXU _n :	exports to other CEMAC member states
EXR _n :	exports to ROW
INV _i :	investment in goods
IT:	total investment
L _i ^D :	sector's employment
Leon:	equilibrium checking variable
MC _q :	total imports
P _i :	sector's production cost
PC _i :	composite goods price
PCHT _i :	composite goods price exempt from TCA
PD _j :	domestic producer price
PDC _q :	domestic producer price of composite local goods
PDM:	domestic market price (ITC)
PDMHT _j :	domestic market exempt from TCA price
PEC _q :	domestic price of total composite exports
PEUC _q :	domestic price of total composite exports to CEMAC
PERC _q :	domestic price of total composite exports to ROW
PEU _n :	domestic price of exports to CEMAC
PER _n :	domestic price of exports to ROW
Pindex:	general consumer price index
PMC _q :	domestic price of total imports
PMU _m :	domestic price of imports from CEMAC
PMUHT _m :	domestic exempt from TCA price of imports from CEMAC
PMR _m :	domestic price of imports from ROW
PMRHT _m :	domestic exempt from TCA price of imports from ROW
PMUC _q :	domestic price of composite imports from CEMAC
PMRC _q :	domestic price of composite imports from ROW
PP _j :	production cost of goods and services
PVA _i :	sector's value-added price
Q _i :	composite goods supply
RK _i :	sector's capital remuneration
RM _m :	imports from ROW

Table 18A.2: to be continued

RMC_q :	composite imports from ROW
$RTCACI_p$:	intermediate consumption TCA revenue
SG:	government saving
SM:	household saving
SS:	firms saving
$STP_{m,z}$:	imports proportional surcharge revenue
$TAXD_j$:	indirect taxes on local products revenue
$TAXE_{n,z}$:	export taxes revenue
$TAXM_{m,z}$:	imports custom duties revenue
TAXP:	production tax revenue
$TCA_{m,z}$:	imports TCA revenue
$TDA_{m,z}$:	imports excise taxes revenue
tch:	unemployment rate
UM_m :	imports from CEMAC
UM_u :	imports of products subject to the unique tax
UMC_q :	composites imports from CEMAC
VA_i :	sector's value added
XP_j :	domestic goods supply
XS_i :	sector's domestic output
YDM:	household disposable revenue
YG:	government revenue
YM:	household total revenue
YS:	firms' revenue

Exogenous Variables

BC:	global current account
e:	nominal exchange rate with ROW
K_i :	sector's stock of capital
L_i :	total labour supply
PWE_n :	exports world prices
PWM_m :	imports world prices
CG:	government consumption
TMS:	household transfers to firms
TGM:	government transfers to households
TGR:	government transfers to ROW
TRG:	ROW transfers to the government
TSR:	firms transfers to ROW
TMR:	household transfers to ROW
TGS:	government transfers to firms
TRM:	ROW transfers to households
TRS:	ROW transfers to firms
w:	average wages rate

Parameters

a_{ip} :	input–output coefficients
A_i :	Cobb–Douglas shift parameter
l_i :	labour share parameter in the value-added production function
l_K^M :	capital remuneration share owned by household

Table 18A.2: to be continued

l_K^S :	capital remuneration share owned by firms
l_a^U :	share of imported agricultural in total agricultural imports from CEMAC
l_b^U :	share of imported industrial products in total industrial imports from CEMAC
l_a^R :	share of imported agricultural products in total agricultural imports from ROW
l_b^R :	share of imported industrial products in total industrial imports from ROW
pms:	household average rate of saving
tdi:	dividends share received by household
tym:	household direct tax rates
trk:	firms' profits tax rate
td _j :	indirect tax rates on local products
tda _j :	excise tax rates on local products
tdd _{m,z} :	imports custom duty tax rates
tda _{m,z} :	imports excise tax rates
tca _j :	TCA rates on local products
tca _{m,z} :	imports TCA rates
tu:	unique tax rate
tsp _{m,z} :	imports progressive surcharge rates
tpd _j :	production tax rates on local products sold locally
tm _{m,z} :	average former imports custom duty rates
teu _n :	CEMAC exports tax rates
ter _n :	ROW exports tax rates
tpeu _n :	production tax rates on local products exported to CEMAC
tper _n :	production tax rates on local products exported to ROW
b _i ^C :	share of goods in household consumption
b _j ^D :	share of local products sold locally
b _n ^E :	share of local products sold on each external market
b _i ^G :	share of goods in public expenditure
b _i ^I :	share of good total investment
b _{ij} ^P :	share of goods in sector's production
io _{ij} , v _{ij} :	techniques coefficients
B _q ^M , B _q ^{1M} :	Armington shift parameters
d _q ^q , d1 _q ^q :	Armington exponents
r _q ^q , r1 _q ^q :	substitution parameters in the CES functions
s _q ^M , s _q ^{1M} :	substitution elasticity of imports
s _n ^E , s _n ^{1E} :	transformation elasticity of exports
g _n ^q , g1 _n ^q :	CET shift parameters
j _n ^q , j1 _n ^q :	CET functions exponents
B _n ^X , B _n ^{1X} :	CET shift parameters

Source: author's compilation.

Table 18A.3: Scenario Impact on Some Macroeconomic Performance Indicators of Cameroon and Gabon (in % change of base year)

Wording Countries	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5		Scenario 6	
	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab
A. Fiscal Elements												
- Total rectcal Revenue	-2,40	11,20	5,47	9,60	5,92	9,71	6,10	9,68	7,52	8,25	0,32	11,55
- Total Indirect Fiscal Revenue(RFI)	45,74	38,76	0,00	0,00	0,00	0,00	10,00	10,00	10,00	10,00	10,00	10,00
- Total Fiscal Revenue(RFT)	14,38	-19,70	3,56	3,67	3,86	3,71	0,49	9,88	1,41	9,33	3,28	10,59
B. Production Elements												
- GDP at Factor0,28 Prices (sum VAI)	3,16	1,12	2,75	1,18	2,47	1,20	2,74	1,58	2,42	0,76	4,71	
- Total taxes on Local Products sold Locally	391,15	-12,01	251,41	91,42	261,76	90,99	299,33	108,95	303,90	116,76	266,15	15,48
- Total Import Taxes	8,05	-12,42	59,83	8,98	65,41	91,81	61,79	119,20	62,38	117,69	36,51	112,24
- Total Export Taxes	16,48	1,60	13,84	2,93	13,29	2,80	13,07	2,84	11,53	4,38	13,80	2,95
- GDP at Current Prices (sum VAI + RFI)	2,05	3,51	1,06	2,31	1,13	2,33	0,64	3,90	1,00	3,63	1,22	5,55
C. Macro-economic Equilibrium Elements												
- Budget Deficit/Surplus (SG)	23,68	129,34	3,46	14,43	3,77	14,67	1,63	52,35	16,11	16,30	11,56	8,37
- CEMAC Balance Account(BCU)	7,88	32,12	12,26	47,40	12,78	48,75	12,96	53,22	15,42	43,50	6,22	54,29
- ROW Balance Account (BCR)	1,00	0,69	1,55	1,02	1,61	1,05	1,64	1,15	1,95	0,94	0,57	1,17
- Global Balance Account (BC)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
- Total Exports to CEMAC Countries (EXU _n)	7,68	2,43	12,05	3,20	12,58	3,08	12,75	2,78	15,07	5,21	6,24	3,56
- Total Exports to the ROW (EXR _n)	8,37	2,05	11,32	3,07	12,11	2,96	12,47	2,81	14,29	4,83	9,25	3,28
- Total Imports from CEMAC (UMm)	0,23	22,91	3,74	35,09	4,60	36,03	4,31	39,25	1,23	33,41	6,94	39,02

Table 18A.3: to be continued

Wording Countries	Scenario 1		Scenario 2		Scenario 3		Scenario 4		Scenario 5		Scenario 6	
	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab	Cam	Gab
<i>C. Macro-conomic Equilibrium Elements</i>												
Total Imports from the ROW (RMm)	7,80	3,77	10,63	5,65	11,35	5,39	11,68	5,02	5,59	0,12	8,82	5,99
- Total Investment (IT)	11,16	2,92	8,05	23,35	8,72	23,66	5,78	31,40	17,58	13,92	5,72	18,82
- Unemployment Rate(tch)	4,67	49,83	18,34	43,02	19,47	43,40	19,79	43,03	25,76	37,61	13,21	72,63
- Households Revenue (YM)	1,95	10,38	5,06	9,21	5,46	9,30	5,58	9,34	6,94	8,12	0,40	12,57
- Firm Savings (SS)	2,96	14,53	6,56	12,35	7,11	12,52	7,32	12,47	8,99	10,49	0,76	12,16
- Average Welfare Variation of Households (H*) (in billion of CFA Francs)	295,14	98,34	15,17	12,46	17,09	13,93	33,83	47,72	39,32	46,41	39,26	14,91

Source: author's construction with data from the scenario results.

The Informal Economy and Tax Revenue of Cameroon's Economy

Aloysius Ajab Amin and Alexander Mbeaoh

Introduction and Background

Cameroon has evolved in terms of economic, social and political changes since independence. In many cases these changes required conformity to new rules and restrictions imposed by the government. During the period, the government itself has been reforming and creating new institutions necessary for effective management of the public sector and the creation of favourable conditions for private sector development. An alternative for those not capable or not willing to abide by formal regulations has been to carry out activities informally or to conceal them from the government authorities. All such hidden activities accumulate to have contributed to the growth of the informal economy. The informal economy has existed for centuries, but the term is very recent. In fact it was coined and used for the first time by Keith Hart in a study on Ghana in 1971 (Hart 1973) and then taken up by the ILO in a very popular document on Kenya in 1972 (ILO 1972).

The informal economy has taken different appellations in the literature, among which are: second economy (Chipeta 2002), parallel economy (Del Boca and Forte 1982), unofficial economy (Kaufmann and Kaliberda 1996), shadow economy (Schneider 1997), underground economy (Tanzi 1983), black economy (Dilnot and Morris 1981), subterranean economy (Guttman 1977), irregular economy (Mirus and Smith 1982) etc. Consequently, many definitions and measurement approaches have been used. However, one of the most popular definitions of the informal economy is that chosen by Schneider. According to him the informal economy is the sum of all economic activities that contribute to value-added and which should be included in national income in terms of national accounting conventions but are presently not registered by national measurement agencies (Schneider 1986).

For this study, by 'informal economy' we mean all enterprises and activities that the government is willing and able to capture but which for one reason or the other

do not comply with standard business norms such as filing taxes, adhering to labour laws, being registered with chambers of commerce etc. ; in other words, these activities generate income from legal sources. As shown in Table 19.1, our study does not focus on the broad informal economy. It excludes all illegal activities and do-it-yourself work and neighbour-help legal monetary activities.

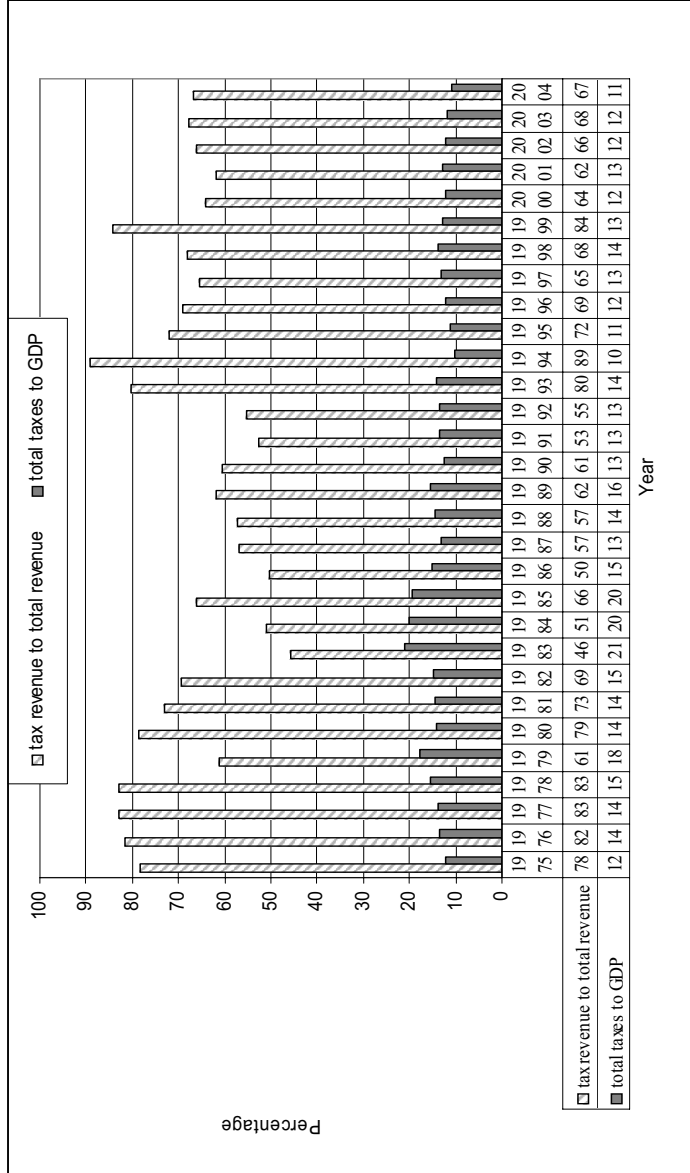
Table 19.1: A Taxonomy of Types of Underground Economic Activities

Type Of Activity	Monetary Transactions		Nonmonetary Transactions	
Illegal Activities	Trade in stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling and fraud.		Barter: drugs, stolen goods, smuggling etc. Produce or growing drugs for own use. Theft for own use.	
	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
Legal Activities	Unreported income from self-employment; Wages, salaries and assets from unreported work related to legal services and goods.	Employee discounts, fringe benefits.	Barter of legal services and goods.	All do it yourself work and neighbor help.

Source: Ogunç and Yilmaz 2000.

Initially the informal economy of Cameroon was a breeding ground for mainly the unskilled population. However, with the advent of the economic crisis and the resulting adjustment policies, it became an integrated sector by itself. Also, many tax reforms have been put in place to raise tax revenue, and each reform has more or less been associated with increasing the tax rates. Today the informal economy, which remains difficult to tax, accounts for 49 per cent of GDP and represents 90 per cent of Cameroon’s employment (INS 2005). Tax revenue in Cameroon as indicated in Fig. 19.1 has always constituted a greater part of total revenue, only falling less than 50 per cent in 1983 (45.79 per cent).

**Fig.19.1 The Evolution of Tax Share in Total Revenue and GDP,
1975–2004**



Source: authors' data compiled from Agbor (2004) and IMF *Cameroon Report* (2005)

The rise and growth of the informal economy is not unique to Cameroon. Schneider and Enste (1999) and Schneider (2002) show that this is a universal phenomenon and is increasing in many countries around the world. In Cameroon, the informal economy in 2002 alone generated income representing 32.8 per cent of GNP (Schneider 2002) and employing 59 per cent of the active population of Yaoundé (Kinge 2004). What was the situation before this time and has it improved or not? Indeed, economic policy measures may be wrong or move in the wrong direction if they are based on incomplete information. Such policy mistakes based on erroneous figures are very costly for developing countries like Cameroon. To avoid such costly errors, there is need to obtain proper information and develop a good knowledge of the informal sector over time as an input for decision-making.

The importance of the size of this universal phenomenon makes one wonder if reducing both the size of the informal economy and tax rates would not result in more tax income. Before thinking of tackling the informal economy, it would be interesting to know its size and magnitude, which is the object of this study. Initial work was been done in 1993 and 2005 by the National Statistics Institute. These studies were geographically limited to Yaoundé for financial reasons and a direct method was employed, which was based on inquiries and samples.

The main objectives of this chapter are to estimate the size of Cameroon's informal economy from 1975 to 2004, and to compare the size of the estimated informal economy with GDP. Then, with figures for the estimated informal economy, an estimation will be made of the possible degree of tax evasion and avoidance. A better idea of the informal economy will enable the government to know what extra amount of revenue and by implication how the resources that can be generated from the domestic economy.

In the rest of the chapter we examine theoretical and empirical works on both methods of estimating the informal economy and on its impact on tax yield. We go further to present a methodology and estimation of the informal economy of Cameroon from 1975 to 2005. Thereafter we summarize our findings and look at some policy implications in the conclusion.

Literature Review

Theoretically there are many techniques of estimating the informal sector. Each of these has been developed to satisfy a particular objective and has certain advantages and limitations. These techniques are often divided into the direct and indirect approaches, which we will now examine.

Direct Approach

Direct techniques measure the output of the informal economy directly and depend on well-designed surveys and sampling. Some of the best-known direct techniques are fiscal and national accounts approaches. Overall, direct approaches are not able to provide enough information on the trend or development of the informal economy since they are based on sample surveys. The results of such surveys may

not capture all the hidden activities in the economy because the estimation depends on the honesty of the questioned individuals. Another disadvantage of the micro approach is that surveys are relatively expensive to conduct.

Indirect Approaches

Indirect techniques, also called macroeconomic or indicator approaches, employ many economic indicators that give information about the development of the informal economy over time such as labour, physical inputs and demand for currency. The corresponding techniques have been referred to as labour market approaches, physical input approaches and monetary approaches. The monetary approaches are relevant in the present discussion.

Monetary Approaches

In monetary approaches, the income of the informal economy is calculated from estimates of demand for currency. The basic assumption here is that to avoid being noticed by government, activities in the informal economy avoid the use of cheques drawn on demand deposits. Instead, they insist on cash for all their transactions. Changes in currency holdings are therefore seen as a reflection of changes in the level of activity in the informal economy. Commonly used monetary approaches are the currency denomination method first used by Feige (1979); the fixed monetary ratio method introduced by Guttman (1977); and the currency demand equation developed by Tanzi (1980, 1983) and Cagan (1985).

The fixed monetary ratio method is based on the assumption that there is a monetary ratio that would have remained constant over time had there not been the informal economy, and that there was an ideal period in the past when there was no informal economy. Where C stands for currency in circulation, D for demand deposits, M is narrow money, V is transaction velocity of money, and GNP is the official gross national product, the fixed monetary ratio was specified as C/D by Guttman (1977) and MV/GNP by Feige (1979). Through changes in these ratios over time, Guttman and Feige were able to estimate the size of the informal economy.

The currency demand equation method estimates the demand for money as a function of a number of variables that influence the behaviour of people towards the demand for money. Included in the equation is a tax variable on the assumption that people go into the informal economy to evade taxes. Assuming, again, that currency is used primarily to effect transactions in the informal economy, an estimate of the size of the informal economy can be made.

(See Table 19.2 for a summary of the relevant literature).

Using monetary approaches and other approaches, a number of studies have shown that income generated in the second economy is a significant proportion of official GDP.

Table 19.2 Summary of Literature on the Informal Economy

Name	Period	Country	Technique	Result
Chipeta C (2002)	1972–90	Malawi	Guttman/Tanzi	The informal economy is large and its growth exceeds that of the formal economy. The values from the Tanzi exceed those of the Guttman approach
Green (1981)	1982	Uganda	Monetary	Two-thirds of GDP
INS (2005)	1993–2003	Cameroon	Survey	The informal economy accounts for 49 per cent of GDP
Kinge (2004)	1993	Cameroon	Inquiry	59 per cent of employment in Yaoundé is in the informal economy
Maliyamkono(1990)	1986	Tanzania	Guttman	31.4 per cent of GDP
Maurin et al. (2003)	1973–99	Trinidad & Tobago	Applied SCVAR to the Tanzi approach	Average of 7.6 per cent of GDP
May (1985)	1982	Ghana	Monetary	32.4 per cent of GDP
Name	Period	Country	Technique	Result
Mirus and Smith (1982)	1976	Canada	Monetary	14 per cent of GDP
Osoro(1992)	1986	Tanzania	Guttman/Tanzi	28.3 per cent of GDP
Tucker (1982)	1878/79	Australia	Monetary	10 per cent of GDP
Tunyan (2005)	1994–2004	Armenia	Guttman/Tanzi	The informal economy is quite significant but the values from the Guttman exceed those of the Tanzi approach
Atkins (1999)		Pakistan	Tanzi's methodology	No link found between the tax rate and the currency ratio, and the only variable that affects the currency ratio is the interest rate
Kemal Ali (2003)	1973–2002	Pakistan	Tanzi specification according to the new econometric techniques	Found that in the base year (1973), underground economy was 20.27 per cent of GDP, which increased to 25.51 per cent in 1991. Between 1991 and 1998 it increased rapidly, and was 54.52 per cent in 1998. However, by 2002 it had declined to 37.25 per cent of GDP

Source: compiled by the authors.

This currency demand approach is one of the most commonly used approaches to estimate the size of the informal economy. However, it has been criticized on various grounds:

- (i) not all transactions in the informal economy are paid in cash. The size of this economy may therefore be even larger than estimated;
- (ii) it considers only the tax burden as a cause of the informal economy. It fails to account for other factors such as the impact of government regulation, taxpayers' attitude towards the state, tax morality, etc., which are difficult to quantify with reliable data in most countries;
- (iii) it assumes the same velocity of money in both types of economies, which may not hold;
- (iv) it assumes a base year when the informal economy was non-existent.

One additional critique of this method is that it is in poor conformity with modern econometric techniques and consequently there is a risk of estimating spurious currency demand equations. To avoid such limitations, some authors, including Atkins (1999), Kemal Ali (2003) and Maurin et al. (2003), used modern econometric techniques in their studies.

The Impact of the Informal Economy on Tax Yield

There is also much divergence in the literature on the impact of the informal economy on tax yield. While early studies (e.g. Guttman 1977; Feige 1979; Tanzi 1983) emphasized the roles of high taxation and large welfare state systems in pushing businesses and their workers into the informal economy, some later studies found the opposite (e.g. Kaufmann and Kaliberda 1996) though others continue to support the more traditional relationship (e.g. Schneider 2002).¹ When the informal economy increases and tax revenues fall, governments may raise tax rates and consequently increase the tax burden of known and honest taxpayers. However, this simply pushes more economic activity into the informal economy.

Methodology

From the review of literature and the economic reality of Cameroon, this section develops two models to estimate its informal economy. The first model is that developed by Guttman (1977), and the second is that of Tanzi (1983). With the results obtained, we compare both methods and thereafter we estimate the evaded taxes.

Model One: The Guttman Model

This method is generally referred to as the simple currency ratio (SCR). It makes use of the ratio of currency to demand deposits (currency ratio). This method holds that cash has a basic comparative advantage over cheques for payment of services and goods that individuals can hide from the authorities. By tracing movements in the ratio of currency in circulation to demand deposits, Guttman's approach generates

estimates of the overall size of the informal economy by comparing the discrepancy between the actual demand for currency and some notion of the expected demand for currency.

The mathematical actual Guttman formula used to estimate the size of the informal economy is specified as:

$$Y_u = \frac{1}{\beta} Y_r \frac{(k_u + 1)(C - k_r DD)}{(k_r + 1)(k_u DD - C)} \quad (1)$$

where:

C	$= C_r + C_u$	C	= currency in circulation
DD	$= DD_r + DD_u$	DD	= demand deposit
k_r	$= C_r / D_r$	Y	= income level
k_u	$= C_u / D_u$	u	= underground economy
V_r	$= Y_r / (C_r + D_r)r$		official (registered) economy
V_u	$= Y_u / (C_u + D_u)$	v	= income velocity
b	$= v_r / v_u$	k	$= (C/D)$

Model Two: The Tanzi Model

With the Tanzi approach, a currency demand equation is specified and estimated. After estimating this equation, the effect of a change in the tax level on that demand can then be inferred. The basic regression equation for currency demand proposed by Tanzi (1983) is based on the idea that the amount of cash in circulation is a function of taxes, wages and salaries, the interest rate and the income level of the population. Mathematically this is expressed thus:

$$\ln(C/M2)_t = \beta_0 + \beta_1 \ln(1 + TW)_t + \beta_2 \ln(WS/Y)_t + \beta_3 \ln R_t + \beta_4 \ln(Y/N)_t + \mu_t \quad (2)$$

where :

$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$ and

- $\ln$ denotes natural logarithms;
- $C/M2$ is the ratio of cash holdings to current and deposit accounts;
- TW is a weighted average tax rate (to proxy changes in the size of the informal economy);
- WS/Y is a proportion of wages and salaries in national income (to capture changing payment and money-holding patterns);
- R is the interest paid on savings deposits (to capture the opportunity cost of holding cash);
- Y/N is the per capita income; and
- μ is the error term.

Model One: The Guttman Model Modified

From equation (1) and assuming that:

- all payment of transactions in the informal economy are only realized by using cash. Therefore k_u turns to infinity, as the limit of k_r turns towards a constant;
- the ratio of cash to demand deposits remains constant except for changes induced by the growth of unreported income; and

- the velocity of money in the informal economy is equal to registered (official) economy's income velocity of money.

The second assumption and the third assumption implies $\beta = 1$.

Imposing these restrictions on the general solution, and replacing Y_u and Y_r with $HIDCON$ and $OFECON$, respectively, we carry out the necessary mathematical transformation to show that the informal economy income is a function of official economy income, currency in circulation and demand deposit, that is :

$$HIDCON = \frac{OFECON}{DD \cdot (1 + C/DD_{BY})} \cdot (M1 - DD \cdot (1 - C/DD_{BY})) \quad (3)$$

where:

- $HIDCON$ is informal economy nominal GDP;
- $OFECON$ is official economy nominal GDP;
- C is currency in circulation;
- DD is demand deposits;
- DD_{BY} is demand deposit of the base year;
- C/DD is ratio of currency in circulation to demand deposits; and
- $M1$ is narrow money (currency in circulation plus demand deposit).

Model Two: The Tanzi Model Modified

Based on the Tanzi model (equation 2), we specify the demand for currency equation in order to better adapt it to our economy. Contrary to the model used by Tanzi, we use currency per capita as a dependent variable of our model, instead of the ratio of currency in circulation to $M2$. The principal reason for this is that the model with Tanzi's dependent variable failed some statistical tests and so we have to make the necessary specification. The explanatory variables include: income taxes as percentage of GDP, contrary to Tanzi's original model where marginal tax rates were used for capturing the tax burden; and the effects of tight tax administration on the demand for currency, because of the multiple tax rates of the country and the lack of data; real interest rate; per capita income wages and salaries as a ratio of total government expenditure; inflation; the illiteracy level (included to capture the ability of using cheques); and a dummy variable for the period 1988–96, to capture the impact of the structural adjustment programme. All the variables are logged and the model specified as follows:

$$\ln(CURPERCAPITA)_t = \beta_0 + \beta_1 \ln(PCY)_t + \beta_2 \ln(RIR)_t + \beta_3 \ln(YTRGDP)_t + \beta_4 \ln(WSRTE)_t + \beta_5 \ln(ILLPOP)_t + \beta_6 \ln(CPI)_t + \beta_7 DUM + \mu_t \quad (4)$$

where:

$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$ and

- $\ln$ denotes natural logarithms;
- $CURPERCAPITA$ is currency per capita;
- $YTRGDP$ is income taxes as a percentage of GDP (to proxy changes in the size of the informal economy);

- WSRTE is a proportion of wages and salaries to total expenditure (to capture changing payment and money-holding patterns);
- RIR is the interest paid on savings deposits (to capture the opportunity cost of holding cash);
- PCY is the per capita income;
- CPI is annual percentage in consumer price index to proxy for inflation;
- ILLPOP is percentage of illiterate adult population;
- DUM is a dummy to capture the effect of structural adjustment; and
- μ is the error term.

Estimates and Analysis of the Informal Economy of Cameroon 1975–2004

Using the Guttman Method

Using Equation (3), we simply replace the corresponding values of the variables and the result is a direct estimate of the informal economy of Cameroon. This is repeated for the entire period under consideration where 1996 is considered as the base year, that is, the period when the currency ratio was at minimum. The result is shown in Fig. 19.2 and Table 19A.1 in the appendix. It should be noted that this method relies on the currency ratio and velocity of circulation. These two concepts are by themselves very volatile in unstable economies like that of Cameroon where financial innovations can destabilize money demand within a very short period. The currency ratio variation in Cameroon depends on many other factors, such as banking regulations, the existence of non-financial institutions like Njangi or tontine houses, and even elections.

Using the Tanzi Method

Using a two-step procedure, the informal economy is derived. First, estimating the currency demand, it is possible to calculate the ‘excess’ demand for currency that comes from the informal economy. In this method, it is also assumed that the income velocity of money is the same in both the official and informal economy. Equation (4) is estimated with Eviews 5 and, after necessary statistical tests, the error correction model (ECM) used is specified as:

$$D(\text{LNCURPERCAPITA}) = 1.348 + 0.935 \cdot D(\text{LNPCY}, 2) - 0.566 \cdot \text{LNCURPERCAPITA}(-1) + 0.316 \cdot \text{LNPCY}(-1) + 0.139 \cdot \text{LNYTRGDP}(-1) - 0.208 \cdot \text{DUM} \quad (5)$$

Table 19A.3 only shows those variables that are significant at the 5 per cent significance level with the exception of $\text{LNYTRGDP}(-1)$, which is retained at the 10 per cent significance level. Secondly, from this regression results we can estimate the currency in circulation (C^*) for our sample period of 1975–2004 (see Table 19A.2). Based on our key assumption that the informal economy results from complex tax laws and other administrative regulations, we set the coefficient of the tax (YTRGDP) variable equal to zero, while other coefficients are unchanged. We then estimate the

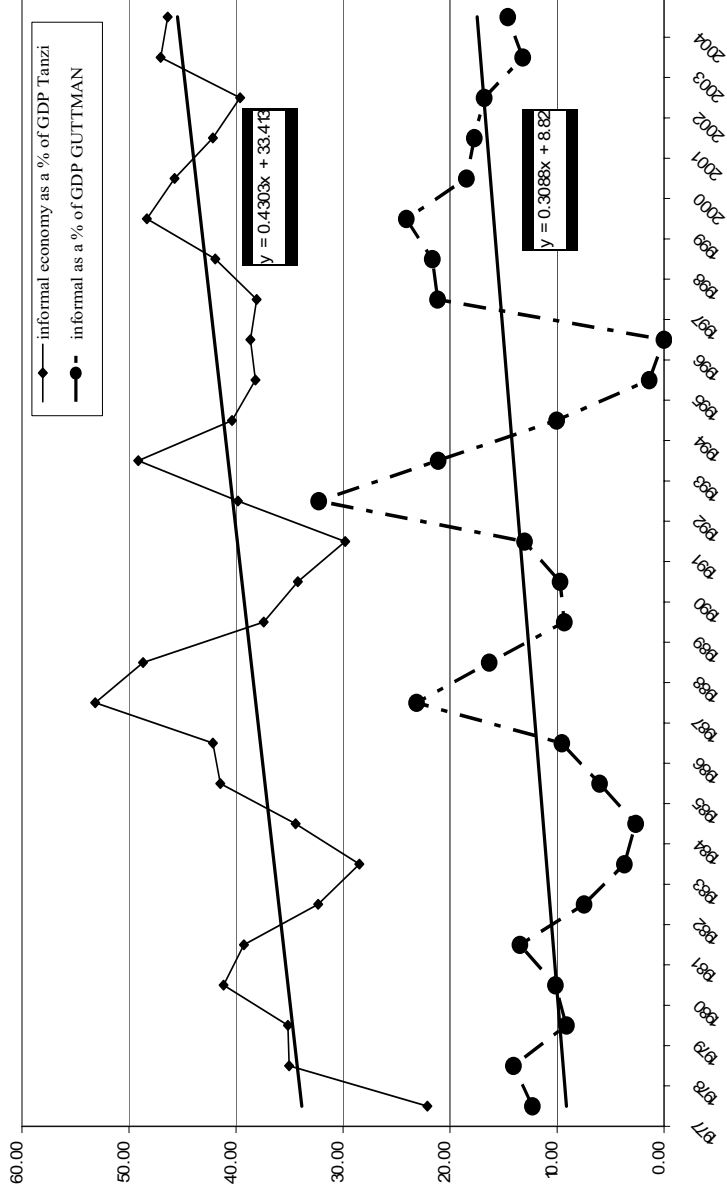
amount of the currency that would have been demanded if there were no taxes. From this procedure we obtain the value of currency in circulation if there were no taxes (C^{**}). The 'excess' currency is calculated by subtracting the estimated currency with zero taxes (C^{**}) from the initially estimated currency (C^*). This 'excess' currency demand is attributed to the informal economy. Thereafter, the size of the informal economy is calculated by multiplying the 'excess' currency by the income velocity of money, defined as the ratio of GDP to currency in circulation. Here, however, we should accept that the velocity of money would have been even higher if the official GDP included the full size of the informal economy. Table 19A.2 shows the results and provides annual estimates of the size of the informal economy of Cameroon for the period of 1975–2004 as presented graphically in Fig. 19.2.

From the appendix findings it is apparent that the informal economy, which in 1975 was just 22.13 per cent of GDP, was growing steadily and reaching 41.16 per cent in 1980. This growth could be attributed to the activities resulting from the oil revenue that was fuelling the informal sector. From 1980, the informal economy was decreasing especially as there was a change in regime consequently bringing the New Deal government to power with its policy of 'Rigour and Moralization'. In 1983 the informal economy reached a record low of 28.47 per cent. With the April 1984 aborted *coups d'états*, there was further enforcement of tax rules. This explains in part the rise of the informal economy to a record high of 53.13 per cent; another reason was the economic crisis that started rocking the country, forcing the government to reduce some non-financial benefits enjoyed by civil servants and consequently inducing them to seek other informal sources of income. The fall in crude oil prices in 1986 alongside other export commodities obliged the government to reinforce domestic revenue collection, thus reducing informal activities at least as far as tax collection was concerned. At the heart of the Structural Adjustment Programme (SAP), the social consequences became almost unbearable to the population and the increase in poverty led people to seek for alternative means of survival. This explains why since 1992 the informal economy has been rising and has remained quite high.

Comparing the Guttman and Tanzi Estimates

Comparing these estimates, it is seen that those derived by the Tanzi method give far higher figures than those derived by the Guttman method. Indeed, but for 1992 where the figures were in the same bracket, the difference in the other years is glaring, especially in 1995 and 1996. These results contrast with the findings of Tunyan (2005) who, using both methods to estimate the informal economy of Armenia, found that the figures generated by the Guttman method exceeded those generated by the Tanzi method. However, using both methods in a similar study for an economy similar to that of Cameroon (Malawi), Chipeta (2002) found a result identical to that of this study.

Fig. 19.2: Estimates of Cameroon's Informal Economy Using the Guttman and Tanzi Methods



Source: authors' calculation.

Unlike Guttman, Tanzi generates his excess currency measure by setting tax rates equal to zero and leaving the other variables constant. By doing this, he only captures excess currency resulting from high tax rates, rather than from other factors. Since Tanzi controls for official income and Guttman does not, the fact that growth tends to reduce the currency demand deposit ratio means that as official income rises, Guttman increasingly underestimates the second economy by underestimating excess currency holdings as well as the income velocity of money.

Estimating Tax Evasion

Applying the actual tax revenue rate to the estimated informal GDP from both methods the amount of evaded taxes can be estimated. Equally, it was possible to determine the potential tax level of Cameroon by adding the evaded taxes to the actual taxes and expressing this as a ratio of GDP. The results show that evaded taxes as a share of GDP are enormous. On average it is about 1.84 per cent of GDP by the Guttman method, though this figure varies, going as high as 4.35 per cent in 1992. However, by the Tanzi method, on average tax evasion represents 5.17 per cent of GDP; in 1985 it reached a record high of 8.11 per cent. These figures might seem small and insignificant but a detail analysis of public expenditure within the last decade can help us understand the magnitude of the problem and the opportunity cost of not dissuading the growth of the informal economy.

Data Sources

This study covers the period 1975 to 2004 for two reasons: first, before 1975 data were scanty; second, prior to this period, it was difficult to distinguish the informal from the formal economy because of the absence of basic statistic infrastructures. The data for this work come mainly from: *International Financial Statistics* (IFS 2005), the World Bank *Africa Database 2005* and IMF *Cameroon Report 2005*. These sources provided the data for both the estimation and the description of the macroeconomic evolution of Cameroon. Except for real interest rate, we mainly use nominal values and local currency where appropriate.

Conclusion and policy implications

The findings of the chapter show that the informal sector is relatively huge in Cameroon and has an upwards trend. These high figures suggest that for a country like Cameroon, where the level of poverty is high, the government has to fully and effectively carry out its important functions of delivery of essential public services and the creation of fair rules regulation for the performance of economic activities. Using the findings of this study and that of others done on Cameroon, it is seen that the informal economy of Cameroon appears to be large and growing especially within recent years. Though the causes of this growth have not been specifically

identified, for any policy aimed at reducing the informal economy to be effective, it should be geared to:

- further simplifying the tax procedures and reducing tax rates with the number of taxes; and
- reducing the bureaucracy and procedures for establishing formal businesses.

It can be argued that the informal economy remains a sector of the national economy, where the poor also make a living. It provides income and employment for those excluded from formal employment because of harsh economic realities. From the size of the informal economy, it is apparent that the opportunity cost in terms of lost government revenue and consequently basic social services (health and education) not provided far exceeds any individual advantage that may exist. Therefore there is an urgent need to derive measures to reduce the rise trend of the informal economy.

Note

1. However, in Schneider and Neck (1993) it is argued that the complexity of a tax code is more important than its level of tax rates.

References

- Agbor, Dorothy Nkongho, 2004, 'An Empirical Investigation of Determinants of the Level of Taxation in Cameroon', MA thesis, Graduate School of Business and Commerce, Keio University, Tokyo.
- Amin, Aloysius Ajab, 1998, *Cameroon's Fiscal Policy and Economic Growth*, AERC Research Paper No. 85, Nairobi: AERC.
- Amin, Aloysius Ajab, 2000, *Equity, Microeconomic and Efficiency Effects of Revenue Policy in Africa*, Fourth AERC Senior Policy Seminar, Gaborone (Botswana): AERC.
- Amin, Aloysius Ajab and Dorothy Agbor, 2001, 'Government Revenue and Revenue Production in Cameroon', revised proposal submitted to AERC, Nairobi: AERC.
- Atkins, F.J., 1999, 'Macroeconomic Time Series and the Monetary Aggregates Approach to Estimating the Underground Economy', *Applied Economic Letters*, Vol. 6, pp. 609–11.
- Bagachwa, M.S.D. and A. Naho, 1995, 'Estimating the Second Economy in Tanzania', *World Development*, Vol. 23, No. 8, pp. 1347–99.
- Bhattacharyya, D.K., 1990, 'An Econometric Method of Estimating the "Hidden Economy", United Kingdom (1960–1984): Estimates and Tests', *Economic Journal*, Vol. 100, pp. 703–17.
- Bhattacharyya, D.K., 1999, 'On the Economic Rationale of Estimating the Hidden Economy', *Economic Journal*, Vol. 109, pp. 348–59.
- Blades, Derek and David Roberts, 2002, 'Measuring the Non-observed Economy', *OECD Statistics Brief*, Vol. 5, pp. 1–8.
- Cagan, Phillip, 1985, 'The Demand for Currency Relative to the Total Money Supply', *Journal of Political Economy*, Vol. 66, pp. 303–28.
- Chipeta, C., 2002, *The Second Economy and Tax Yield in Malawi*, AERC Research Paper No. 113, Nairobi: AERC.

- Del Boca, D. and F. Forte, 1982, 'Recent Empirical Surveys and Theoretical Interpretations of the Parallel Economy in Italy'. In: V. Tanzi, ed., *The Underground Economy in the United States and Abroad*, Lexington, MA: Lexington Books.
- Dilnot, Andrew and C.N. Morris, 1982, 'What Do We Know about the Black Economy in the United Kingdom?' In: V. Tanzi, ed., *The Underground Economy in the United States and Abroad*, Lexington, MA: Lexington Books.
- DSCN (2002), *Living Conditions and Poverty in Cameroon in 2001*, Main Report on the Second Household Survey.
- Feige, Edgar L., 1979, 'How Big is the Irregular Economy?', *Challenge*, Vol. 22, No. 1, pp. 5–13.
- Frey, Bruno S. and Werner Pommerehne, 1984, 'The Hidden Economy: State and Prospect for Measurement', *Review of Income and Wealth*, Vol. 30, pp. 1–23.
- Giles, David, E.A., 1999, 'Measuring the Hidden Economy: Implications for Econometric Modeling', *Economic Journal*, Vol. 109, No. 456, pp. 370–80.
- Guttman, P.S., 1977, 'The Subterranean Economy', *Financial Analysts Journal*, Vol. 34, No. 6, pp. 24–5, 34.
- Hart, K., 1973, 'Informal Income Opportunities and Urban Employment in Ghana', *Journal of Modern African Studies*, Vol. 11, No. 1, pp. 61–89.
- ILO, 1972, *Employment, Incomes and Inequality: A Strategy for Increasing Productive Employment in Kenya*, Geneva: ILO.
- IMF, 2005, *International Financial Statistics*, CD ROM, Washington, DC: IMF.
- Institut National de la Statistique (INS), 2005, *Les resultats définitifs de l'enquête sur l'emploi et le secteur informel au Cameroun*, Yaoundé: DIAL-DSCN.
- Kaufmann, Daniel and A. Kaliberda, 1996, 'Integrating the Unofficial Economy into the Dynamics of Post-socialist Economies'. In: B. Kaminsky, ed., *Economic Transition in the Newly Independent States*, Armonk, NY: M.E. Sharpe.
- Kinge, Apollinaire, 2004, *The Cameroun Experience of the Informal Sector: Improving the Quality of Informal Sector Statistics – Country Experience*, 7th Meeting of the Expert Group on Informal Sector Statistics (Delhi Group), New Delhi, India.
- Klovland, J.T., 1984, 'Tax Evasion and the Demand for Currency in Norway and Sweden: Is there a Hidden Relationship?', *Scandinavian Journal of Economics*, Vol. 86, pp. 423–39.
- Knack, Steven and Philip Keefer, 1997, 'Does Social Capital have an Economic Payoff? A Cross-country Investigation', *Quarterly Journal of Economics*, Vol. 112, pp. 1251–88.
- Lackó, Maria, 2000, 'Hidden Economy – An Unknown Quantity? Comparative Analysis of Hidden Economies in Transition Countries, 1989–95', *Economics of Transition*, Vol. 8, pp. 117–49.
- Loayza, N.V., 1996, 'The Economics of the Informal Sector: A Simple Model and Some Empirical Evidence from Latin America', *Carnegie–Rochester Conference Series on Public Policy*, Vol. 45, pp. 129–62.
- Maliyamkono and M.S.D. Bagachwa, 1990, *The Second Economy in Tanzania*, London: Villiers Publications.
- Matthews, K.G.P., 1982, 'Demand for Currency and the Black Economy in the UK', *Journal of Economic Studies*, Vol. 9, pp. 3–22.
- Maurin, A. Sandra Sookran and Patrick K. Watso, 2003, *Measuring the Size of the Hidden Economy in Trinidad and Tobago*, International Conference on Policy Modelling, Istanbul.

- May, E., 1985, *Exchange Controls and Parallel Market Economies in Sub-Saharan Africa: Focus on Ghana*, World Bank Staff Working Paper No. 711, Washington, DC: World Bank.
- Mbeaoh, Alexander, 2006, 'Estimates of the Informal Economy of Cameroon and its Impact on Tax Yield for the Period 1975–2004', MA Thesis, Dakar: IDEP.
- Mirus, R. and R. Smith, 1982, 'Canada's Irregular Economy'. In: V. Tanzi, ed., *The Underground Economy in the United States and Abroad*, Toronto and Lexington, MA: Lexington Books.
- Ogunc, F. and G. Yilmaz, 2000, *Estimating the Underground Economy in Turkey*, Discussion Paper, The Central Bank of the Republic of Turkey.
- Osoro, N.E., 1992, *Tax Reforms in Tanzania: Motivations, Directions and Implications*, AERC Research Paper No. 38, Nairobi: AERC.
- Roberto, D.A. and F. Schneider, 2003, 'The Shadow Economy of Italy and Other OECD Countries: What Do We Know?', *Journal of Public Finance and Public Choice* (PFPC)/*Economia delle scelte pubbliche*, Vol. 21, Nos 2–3, pp. 97–120.
- Schneider, Friedrich, 1986, 'Estimating the Size of the Danish Informal Economy Using the Currency Demand Approach: An Attempt', *The Scandinavian Journal of Economics*, Vol. 88, No. 4, pp. 643–68.
- Schneider, Friedrich, 2002, *The Size and Development of the Shadow Economies of 22 Transitional and 21 OECD Countries During the 1990s*, IZA Discussion Paper No. 514, Bonn.
- Schneider, Friedrich and Dominik H. Enste, 2000, 'Shadow Economies: Size, Causes, and Consequences', *Journal of Economic Literature*, Vol. 38, pp. 77–114.
- Schneider, Friedrich and Dominik H. Enste, 2002, *The Shadow Economy: An International Survey*, Cambridge: Cambridge University Press.
- Schneider, Friedrich and Reinhard Neck, 1993, 'The Development of the Shadow Economy Under Changing Tax Systems and Structures', *Finanzarchiv F.N.*, Vol. 50, pp. 344–69.
- Smith, Philip, 1994, 'Assessing the Size of the Underground Economy: The Statistics Canada Perspectives', *Canadian Economic Observer*, Catalogue No. 11-010, 3, pp. 16–33.
- Tanzi, Vito, 1980, 'The Underground Economy in the United States: Estimates and Implications', *Banca Nazionale Lavoro Quarterly Review*, Vol. 135, pp. 427–53.
- Tanzi, V., 1983, 'The Underground Economy in the United States: Annual Estimates, 1930–80'. *IMF Staff Papers*, Vol. 30, pp. 283–305.
- Tucker, M., 1982, 'The Underground Economy in Australia'. In: V. Tanzi, ed., *The Underground Economy in the United States and Abroad*, Toronto and Lexington, MA: Lexington Books.
- Tunyan, Bagrat, 2005, *The Shadow Economy of Armenia: Size, Causes and Consequences*, Armenian International Policy Research Group Working Paper No. 05/02.
- World Bank, 2005a, *World Bank Africa Database 2005*, CD ROM, Washington, DC: World Bank.
- World Bank 2005b, *World Development Indicators 2005*, CD ROM, Washington, DC: World Bank.

Appendix

Table 19A.1: Guttman Method (CFA Francs, Billions)

Year	Currency in Circulation	R	Currency ratio	MI	GDP	DD* (1+ RATIO%)]	[MI- DD*(1+ RATIO%)]	GDP/DD* (1+ RATIO%)]	HIDCON	HIDCON as a % of GDP
1975	33.71	43.49	0.78	77.20	580.2	64.01	13.19	9.06	119.61	20.61
1976	38.85	57.34	0.68	96.19	657.2	84.39	11.80	7.79	91.91	13.98
1977	50.72	77.7	0.65	128.42	789.9	114.35	14.07	6.91	97.17	12.30
1978	60.05	88.48	0.68	148.53	968.1	130.22	18.31	7.43	136.14	14.06
1979	70.27	116.01	0.61	186.28	1135.4	170.73	15.55	6.65	103.38	9.10
1980	80.84	130.15	0.62	210.99	1356.2	191.55	19.44	7.08	137.68	10.15
1981	105.25	157.12	0.67	262.37	1796.4	231.24	31.13	7.77	241.86	13.46
1982	111.02	190.89	0.58	301.91	2172.8	280.94	20.97	7.73	162.20	7.47
1983	131.24	249.43	0.53	380.67	2618.1	367.09	13.58	7.13	96.83	3.70
1984	141.08	276.35	0.51	417.43	3195	406.71	10.72	7.86	84.20	2.64
1985	155.94	278.38	0.56	434.32	3896	409.70	24.62	9.51	234.13	6.01
1986	171.56	280.31	0.61	451.87	4135	412.54	39.33	10.02	394.22	9.53
1987	175.31	215.9	0.81	391.21	3922	317.75	73.46	12.34	906.78	23.12
1988	175.49	246.49	0.71	421.98	3578.7	362.77	59.21	9.87	584.15	16.32
1989	171.20	281.2	0.61	452.40	3513	413.85	38.55	8.49	327.24	9.32
1990	159.34	259.29	0.61	418.63	3334.2	381.60	37.03	8.74	323.51	9.70
1991	171.45	258.45	0.66	429.90	3319.2	380.37	49.53	8.73	432.23	13.02
1992	151.39	159.94	0.95	311.33	3174.3	235.39	75.94	13.49	1,024.11	32.26
1993	117.4	150.06	0.78	267.46	3125.6	220.85	46.61	14.15	659.70	21.11
1994	138.2	223.09	0.62	361.29	3786	328.33	32.96	11.53	380.10	10.04
1995	105.27	213.97	0.49	319.24	4365.5	314.91	4.33	13.86	60.09	1.38
1996	100.69	213.45	0.47	314.14	4836.5	314.14	0.00	15.40	0.00	0.00
1997	186.18	237.72	0.78	423.90	5266.5	349.86	74.04	15.05	1,114.56	21.16
1998	214.23	271.06	0.79	485.29	5572	398.93	86.36	13.97	1,206.29	21.65
1999	243.24	294.49	0.83	537.73	6010.6	433.41	104.32	13.87	1,446.75	24.07
2000	269.07	361.99	0.74	631.06	6611	532.75	98.31	12.41	1,219.94	18.45
2001	301.04	410.94	0.73	711.98	7136.7	604.79	107.19	11.80	1,264.86	17.72
2002	340.28	473.35	0.72	813.63	7609.3	696.64	116.99	10.92	1,277.84	16.79
2003	308.33	462.88	0.67	771.21	7976	681.23	89.98	11.71	1,053.47	13.21
2004	337.82	492.14	0.69	829.96	8350	724.30	105.66	11.53	1,218.15	14.59

Source: authors' calculations using data from various sources.

Table 19A.2: Tanzi Method (CFA Francs, Millions)

Year	GDP	M1	c*	c**	c*-c**	Pop	Illegal Money	Legal Money	Income Velocity of Legal Money	Informal Economy	Informal Economy as % of GDP
											Tanzi
1975	580200.00	77190.00	4459.39	4459.39	0.00	7.56	0.00	77190.00	7.52	0.00	0.00
1976	657200.00	96190.00	4993.44	4993.44	0.00	7.78	0.00	96190.00	6.83	0.00	0.00
1977	789900.00	128421.00	6782.89	3881.81	2901.09	8.02	23266.71	105154.29	7.51	174775.33	22.13
1978	968100.00	148526.00	7962.78	3298.01	4664.78	8.26	38531.05	109949.55	8.80	339123.84	35.03
1979	1135400.00	186281.00	8956.45	2895.01	5700.44	8.50	48453.74	137827.26	8.24	399154.55	35.16
1980	1356200.00	210993.00	9916.93	2886.22	7030.71	8.75	61518.74	149474.26	07	558167.77	41.16
1981	1796400.00	262373.00	11400.82	3183.28	8217.54	9.00	73957.89	188415.11	9.53	705134.25	39.25
1982	2172800.00	301910.00	10933.52	2968.69	7964.83	9.26	73754.37	228155.63	9.52	702386.77	32.33
1983	2618100.00	380671.00	12064.22	3202.60	8861.61	9.52	84362.56	296308.44	8.84	745404.44	28.47
1984	3195000.00	417433.00	14474.68	3544.77	10929.91	9.78	106894.51	310538.49	10.29	1099792.70	34.42
1985	3896000.00	434320.00	16557.05	3913.82	12643.22	10.07	127317.25	307002.75	12.69	1615711.89	41.47
1986	4135000.00	451871.00	16855.55	3919.03	12936.51	10.36	134022.28	317848.72	13.01	1743540.53	42.17
1987	3922000.00	391207.00	16785.64	4061.31	12724.33	10.67	135768.59	255438.41	15.35	2084590.17	53.15
1988	3578700.00	421984.00	16857.48	4283.42	12574.07	10.99	138189.01	283794.99	12.61	1742585.48	48.69
1989	3513000.00	452397.00	14658.93	3777.75	10881.18	11.32	123174.95	329222.05	10.67	1314351.88	37.41
1990	3334200.00	418632.00	12296.70	3143.88	9152.82	11.66	106721.89	311910.11	10.69	1140816.22	34.22
1991	3319200.00	429040.00	11187.64	2965.15	8222.49	12.00	98669.89	331234.11	10.02	988742.11	29.79
1992	3174300.00	311330.00	9802.26	2622.89	7179.37	12.35	88663.19	222664.81	14.26	1264007.16	39.82
1993	3125600.00	267460.00	9478.64	2545.85	6932.79	12.71	88115.74	179344.26	17.43	1535675.37	49.13
1994	3786000.00	361290.00	10857.11	2901.44	7955.67	13.06	103901.04	257388.96	14.71	1528307.00	40.37
1995	4365500.00	319242.00	9186.92	2607.86	6579.06	13.41	88225.24	231016.76	18.90	1667183.21	38.19
1996	4836500.00	314141.00	8926.68	2567.46	6359.22	13.77	87566.42	226574.58	21.35	1869207.97	38.65
1997	5266500.00	423891.00	11583.87	3301.66	8282.21	14.11	116861.98	370370.02	17.15	2004493.30	38.06
1998	5572000.00	485285.00	13773.60	3859.30	9914.30	14.46	143360.84	341924.16	16.30	2330269.88	41.93
1999	6010000.00	537340.00	16317.15	4472.36	11844.79	14.79	175184.42	362549.58	16.38	2904329.51	48.32
2000	6611000.00	631064.00	18074.31	4973.16	13101.16	15.12	198089.48	432974.52	15.27	3024587.99	45.75
2001	7136700.00	711984.00	18972.94	5287.41	13685.53	15.43	211677.70	500816.30	14.25	3009168.33	42.16
2002	7609300.00	813627.00	20333.66	5655.40	14678.26	15.73	239889.07	582737.93	13.06	3014913.00	39.02
2003	7976000.00	771206.00	21389.96	5988.55	15401.41	16.02	246730.57	524475.43	15.21	3752173.96	47.04
2004	8350000.00	829591.00	22803.52	6449.76	16353.76	16.08	262968.41	566990.59	14.73	3872703.16	46.38

Source: authors' calculations using data from various sources.

Table 19A3: ECM Results of Model 2

Dependent Variable: D(LNCURPERCAPITA)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-statistic	Prob.
C	1.348986	0.553864	2.435588	0.0234
D(LNPCY,2)	0.935782	0.295875	3.162766	0.0045
LNCURPERCAPITA(-1)	-0.566930	0.128356	-4.416839	0.0002
LNPCY(-1)	0.316112	0.084037	3.761587	0.0011
LN YTRGDP(-1)	0.139354	0.080670	1.727453	0.0981
DUM	-0.208791	0.053801	-3.880792	0.0008
R-squared	0.744038	Mean dependent var		0.051314
Adjusted R-squared	0.685864	SD dependent var		0.168802
SE of regression	0.094610	Akaike info criterion		-1.690704
Sum squared resid	0.196922	Schwarz criterion		-1.405231
Log likelihood	29.66985	F-statistic		12.79002
Durbin-Watson stat	1.791031	Prob(F-statistic)		0.000007

Source: authors' estimates using Eviews 5.

Conclusion: Implications for Economic Development

Aloysius Ajab Amin

Introduction

Cameroon's potentials are enormous. It can easily grow above 5 per cent with economic gains well distributed across all segments of society and all sectors of the economy. But it will require intensifying and extending economic reform for improved competitiveness and economic efficiency. This means developing and designing policies that would create and generate employment opportunities, particularly for the poor and the young, rapidly growing labour force, thereby increasing the per capita incomes and significantly reducing or even totally eradicating poverty.

The proper functioning of institutions is a necessary requirement to achieve the desired development goals. To efficiently coordinate the necessary different socio-economic activities, the institutional framework would have to be significantly restructured and strengthened in order to function more effectively and facilitate the performance of economic activities. As many studies show, the increase in poverty in Cameroon has been associated with high levels of inequality. There is evidence that extreme inequality tends to waste productive resources, income being the main determinant of the incidence of poverty. An increase in inequality increases the poverty level and hinders productive investment by restricting a large proportion of the population – the poor – from using their potential productive resources, particularly their labour. Lawrence and Thirtle (2001) observed that East Asian countries grew more rapidly with equitable growth than Latin American countries, which experienced high inequality with high levels of poverty. This suggests that growth is not enough to attain poverty reduction targets. Economic growth may not guarantee development or the eradication of poverty and sustainable development, unless growth is equally distributed and broad-based.

Countries with more equal income distribution have tended to grow faster than those with high inequality. Deliberate policies with appropriate strategies must be implemented to ensure pro-poor growth and sustainable development. The right

policies must be implemented to generate the appropriate distribution patterns for successful equitable growth. Cameroon's economic reforms took various forms. One important characteristic of the country's economy has been the state/government dominance throughout the economy, such that budgetary cuts in the context of the reforms, which was across the board, affected all sectors and the most vulnerable groups of the population. No thorough analysis was done to forecast all the implications and effects of the economic reforms. Technocrats/intellectuals could have helped considerably in the reform process. They could have provided valuable inputs into the reform process, but were not well-utilized. Political leadership is crucial for ensuring a successful reform process. Hence both are necessary: local technocrats to provide proper analysis and policy inputs, as well as strong domestic political leadership for ensuring a successful reform process.

Economic reform without proper analysis and strong commitment to reform is bound to fail right from the start (Devarajan et al. 2001). The proper functioning of institutions is critical. Policies or strategies that significantly improve income distribution and generate equitable growth patterns must be identified and analysed. What types of policies/strategies generate equitable growth, given that the initial distribution of income and regional development are not equal? Certain actions/policies have tended to exacerbate inequality in Cameroon. Improving income and resource distribution has an important link with growth and poverty reduction, and basic socio-economic development. Equitable growth strategies are therefore crucial for poverty reduction. Above all, it is important to provide the poor with the necessary skills and resources that can empower them to participate fully in economic activities, within an enabling environment.

It has generally been observed and argued that growth (as part of development) is greatly enhanced by an environment characterized by critical attributes. Hence, government's role is crucially important in:

- creating adequate access to productive resources with effective physical infrastructure such as roads properly linking all the country's regions;
- strengthening the market infrastructure and facilitating competitive domestic markets;
- providing and giving access to necessary social services, such as health, education, potable water and good sanitation;
- carrying out public investment in health and education with the appropriate quality throughout the country;
- creating an enabling environment for a stable financial system;
- establishing macroeconomic stability with a strong financial sector;
- institutions and promoting good governance;
- carrying out equitable fiscal policy expenditures on those sectors/areas beneficial to the poor and other vulnerable groups;
- creating and providing conditions and enabling environments where the poor can empower themselves, get themselves out of poverty and contribute in

the creation and production of the national wealth; and above all to contribute in creating a broad-based development pattern also through proper delivery and provision of social services.

There are different ways by which potential growth can be raised. These include increasing the resources, improving the productivity of existing resources through training and the enhancement of the skills of workers, improving the technology with research and development (R&D), using better and improved production methods, and above all improving the organization and management of resources. Throughout human existence, economic growth (as a basis for development) has been achieved because appropriate institutional and organizational structures have induced increases in valuable and productive activities. Institutions have also reduced and prevented societal friction and conflicts; and where economies or societies fail to carry out the appropriate activities with high pay-off, it may be because of the inappropriate institutions they possess (Barro 1997; Sala-i-Martin 1997). This underscores the role of institutions in the production, distribution and consumption of goods and services in Cameroon's economy.

Cameroon in CEMAC

The Central Africa Economic and Monetary Community (CEMAC) region consists of Cameroon, Central African Republic, Chad, the Republic of Congo, Equatorial Guinea and Gabon. The CEMAC region is endowed with petroleum and other natural resources, with Cameroon being the largest economy of the CEMAC region: Cameroon has about 50 per cent of the region's GDP followed by Gabon with 23 per cent. The oil sector is the dominant economic sector of the region, constituting on average 31 per cent of GDP (Table 20.1). It generates 48 per cent of budgetary revenue and 77 per cent of exports. Cameroon as an exporter of petroleum is fifth, after Equatorial Guinea, Congo, Gabon and Chad. With no new discoveries of oil in Cameroon, Congo and Gabon, oil production is on the decline, with Cameroon's share representing about 10 per cent of the region's production. Equatorial Guinea is rapidly increasing its production to about 30 per cent of the production of the zone.

Cameroon is endowed with enormous resources, including forestry and mineral reserves. It is the major producer and exporter of timber in the region, accounting for more than two-thirds of total output (BEAC 2005; CEA 2005). Cameroon also is the major producer and exporter of cash crops (cocoa, cotton, coffee, rubber, bananas and palm oil) and food crops (corn, rice, potatoes, cassava, cocoyam and plantain) and the largest producer of livestock in the region.

The relative better performance of the Cameroon economy in recent years is attributed to the unprecedented expansion and improvement of the non-oil sector. The relatively stable political and institutional environment also provides an enabling environment for the carrying out of economic activities. Yet structural problems, with the high level of indebtedness faced by the entire CEMAC region, can compromise the growth and competitiveness of the region.

Table 20.1: CEMAC: Production of Crude Oil (in millions of tons)

	1999	2000	2001	2002	2003	2004	2005ext.
Cameroon	6.0	5.8	5.5	5.2	4.9	4.6	4.2
Congo	13.1	13.1	12.1	11.8	11.2	11.2	12.7
Gabon	15.6	13.6	12.9	12.6	13.5	13.7	13.2
Equatorial Guinea	5.1	5.9	9.7	11.5	13.3	17.6	19.5
Chad	-	-	-	-	1.7	8.7	11.3
CEMAC	39.8	38.3	40.1	40.1	44.6	55.7	61.0

Source: Banque des Etats de l'Afrique Centrale 2005.

The external debt of countries in the sub-region represents approximately 100 per cent of GDP. Despite the huge resource base of the CEMAC countries, the sub-region exports mainly its primary products; thus price volatility generates very poor terms of trade. There is, therefore, a need for high-level and rapid transformation of products and the diversification of exports. This would necessarily lessen trade shocks and broaden the revenue base. It has been observed that countries and regions connected with common currencies, institutions and policies, as well as having access to the markets of each other tend to converge to the same level of income with time. Countries with lower income will tend to converge with those with higher income. Trade openness is important in the convergence process by promoting competition, assisting specialization and facilitating the transfer of knowledge. There is urgent need to strengthen the institutions and develop the right sound policies with strong and effective policy implementation.

In the broadest sense Cameroon has a significant role to play in boosting the economy of the sub-region. It is the largest market; it has a strong desire to strengthen its financial markets, especially the capital market; it must transform its primary products, with more value added into manufactured products by investing more in its manufacturing industries; it must develop its information and communication technology; it must put more efforts into its infrastructural development, especially in terms of roads, sea ports, railways and airports, which could make Cameroon a hub of West and Central Africa. Above all, as a country with its large human resources it must reorient and put strong emphasis on the development of its human capital.

Macroeconomic Stability

The economics literature stresses macroeconomic stability as being a necessary condition for growth. Conceptually, a stable macroeconomic policy environment that is conducive for sustainable growth can be described as one that includes a 'low and predictable inflation rate, appropriate and predictable real interest rate, balance of payments situation that is perceived as viable, real exchange rate that is competitive and predictable' (Fischer 1993:487). Fischer (1993) uses two basic indicators, inflation rate and budget surplus, as a measure for showing the conduciveness of macroeconomic policies to growth. His results suggest that high inflation rates affect growth by decreasing capital accumulation. Similarly, foreign exchange controls

are reflected in a high black-market exchange premium, which tends to reduce capital accumulation. While budget surplus facilitates capital accumulation, high deficits and inflation rates reflect the government's inability to manage the economy.

In the case of CFA franc zone countries, such as Cameroon, low and stable inflation rates have been maintained for long periods without other complementary policies. There were huge fiscal deficits and balance of payment problems. These alter macroeconomic policies and generate uncertainty. The impact of the fiscal deficit on growth was negative through its effects on capital accumulation. Hence, evidence from the CFA franc zone countries, particularly Cameroon, demonstrates that low inflation is not enough as these countries experienced very low growth, even negative growth rates, despite their very low inflation rates.

Sector Shares in the Economy

Structural changes in the economy as reflected by the shares of agriculture and industry in GDP have generally indicated the level of development and economic growth. The trend has always been for a decreasing agricultural share and increasing industry share in GDP with economic activities increasingly shifting from agriculture to industry and then expanding in the service sector, the tertiary sector. These shifts imply market adjustments in inter-sector and intra-sector resource allocations with increases in demand for industrial goods and services. Expansion of the industry and service sectors generally results in increase in per capita income.

The industrial sector expands the economy but there is a much lower rate of growth of per capita income, reflecting the low productivity of the sector. Much of the agricultural output (in its primary stage) is exported but not transformed domestically, while at the same time manufactured goods are mainly imported and not produced locally. In terms of purchasing power, the country generally tends to produce what it does not consume and consumes what it does not produce. In the case of Cameroon, even when industrialization was promoted, it was grossly inefficient. Import substitution policy was designed primarily to promote markets for domestically manufactured goods; but it was poorly conceived, promoting the wrong goods for exports without the proper infrastructure. These industries lacked adequate capital, required skilled labour, entrepreneurial and managerial capacities, and appropriate infrastructure. The result was a large agricultural sector in terms of the large labour force employed but with very low output per capita. Domestic industries have not been promoted to a viable level. Even now the structure supporting exports and domestic industry has not significantly changed despite the enormous resource endowments and effort put in to producing exports – mainly primary goods.

In general, as capital, technology, skilled labour and managerial abilities accumulate through time, the export share of manufactured goods increases proportionately with increases in the GDP share of industry. This is far from being the situation in Cameroon. The export share of manufactured goods has not increased proportionately despite increases in GDP. This reflects the failure of industrial and economic policies that also might have led to Cameroon's slow economic growth.

Non-primary Exports

Cameroon has not fully entered into the trade of manufactured goods or non-primary exports because of a lack of sufficient complementary factors. These factors include, but are not limited to, a pool of scientists and engineers, a workforce educated and trained in various skills, and an adequate infrastructure. Since these do not exist, there has been what can be termed a coordination failure.

Externalities may generate multiple equilibria in which in one of them present in the economy or sector tends to remain at the status quo but at a very low level of socially productive activities, while in another sector, the economy may move to a new stage or level strongly reinforced by the complementary activities of other factors. Cameroon as an exporter of primary products seems to remain in the first equilibrium. The country's infrastructure, such as ports, roads or highways, railroads, the allocation of power and the financial system have been geared towards the export of primary commodities without being properly developed to facilitate the export of manufactured goods and promotion of socio-economic activities of the domestic economy. Hence, today, the economy is stuck in a low-productivity equilibrium. The potentials for sharp increases of productivity in all the sectors are enormous. To this end much effort must be put into transforming the agricultural sector, in promoting R&D and developing the technology in order to move towards a knowledge economy where total factor productivity contributes more greatly to the GDP than the other factors.

Productivity

Productivity can be defined as output per unit of input or factor of production or additional output generated by additional input. Low level of inappropriate capital per worker produces a low level of output per worker, and consequently low income per capita. Furthermore, a low level of income generates a low level of savings and investment, consequently low productivity. A core problem facing Cameroon is the low productivity level of the economy. The country and its people tend to be impoverished because of low productivity. Hence, in order to reduce poverty or eradicate poverty, productivity must be significantly increased.

A sharp sustained increase in productivity is the best way to attain sustainable growth and development, and consequently to reduce or eradicate poverty. The hindrances to production and productivity increases are many, as discussed throughout this volume. Basic economics states that production or productivity depends on capital (physical and human capital), level of technology and capital per worker. The amount of goods and services a worker produces per unit of time with factors of production such as equipment (capital) and skills gives the level of productivity generated by the worker. A worker produces with a given level of skills, technology and a given amount of tools, such that in some activities the worker can generate high output per unit of time while in others the output or productivity may be quite low. This means there are high-productivity jobs as well as low-productivity jobs.

A worker is rich if he generates high value-added output or his productivity is high. A country with high-productivity jobs or activities is rich. Increasing the

productivity of workers or people is the key way to elevating people out of poverty. Raising productivity growth is the way to achieve substantial and sustained economic growth and a corresponding reduction in poverty. High value-added or high-productivity jobs depend also on the level of technology and the environment. An enabling environment for investment activities would encourage high-productivity jobs or activities. Hence, capital and technology would flow to that place where there is no hindrance and thus generate high productivity.

High educational investment in Cameroon's case failed to generate adequate growth partly because of poor quality and inappropriate educational orientation. Much education and training to improve skills and knowledge may have insignificant impact on productivity and growth partly because it is not combined with the appropriate technology and tangible capital. Hence it fails to meet the society's needs. For instance, educational output would not significantly improve productivity in simple manual work (such as clearing a farmland with a cutlass or tilling a farmland with a shovel or spade or sweeping the streets with hand brooms). But basic educational output would greatly raise efficiency and output when applied with modern machinery such as a plough that is machine- or animal-driven. The low growth rates, relative to the high school enrolment ratio in Cameroon, may reflect poor educational orientation and relative shortage of the right tangible capital. In addressing this problem, there may be a drastic change in technology, tangible capital and relevant human capital with skills towards meeting domestic needs and international competitiveness.

The impediments to investment, technology and creation or generation of high-productivity activities are many. The constraints include poor education, poor governance, restrictions on economic transactions, and poor infrastructure in different levels and forms. To achieve high productivity all these must be removed or significantly improved. So much has been said about trade openness as a determinant of growth and poverty reduction. Since trade openness is said to have spill-over effects on some aspects of economic reform, it should be taken as an element of the reform package.

Trade openness must be promoted while taking into consideration domestic and international environments. For example, Cameroon's trading partners (Western countries) have a well-developed trading infrastructure, unlike Cameroon. The Western trading partners do subsidize their commodities in many ways, while there are no subsidies given to most developing countries' goods. Instead the primary export goods are taxed and manufactured goods are not properly promoted. Even in developing trading protocols, the same rules seem to be applied to the two trading partners, surely to the advantage of the Western countries. This is most unfair. It is like having one (Cameroon) of the competitors run on a sandy undulating strip of land while the others (Western countries) run on flat grassland. Yet the same rules are applied.

Impediments to growth and productivity increase can be put into three main categories:

- (i) - Poor governance, which generates the misallocation and mismanagement of resources;
- poor application of the rule of law;
- poor rules and low level of contracts enforcement;

- much corruption, which is a disincentive to investment (foreign and domestic) and the setting up of new firms or expanding existing firms that can potentially generate high-productivity jobs. Poor governance negatively and severely affects capital formation and entrepreneurial activities. For instance, how long does it take a company to be registered? Or how long does it take a document to be treated in a public office? Since, in Cameroon, it is very costly (both in resources and psychic cost) to perform these activities, growth is discouraged and productivity is low.
- (ii) Poor education hinders human capital and technological development. Workers may not have the necessary education and skills to undertake high-productivity jobs or to adopt new technologies for increasing productivity. Hence, there is the need to spread technology through education and training, such as on-the-job training or education via the Internet. It is important to stress the delivery of an increasing quantity and quality of education/training and health services, especially to the poor, with significant improvement in management; collaboration between government and citizens is crucial. All these spur rapid growth and a process of catching up with the advanced countries or more advanced region in the same country.
- (iii) Restriction on economic transactions, trading of goods and services, adopting new technologies, state monopolies, excessive regulation and investment needed to boost productivity. Openness measured by the total trade/GDP ratio $\{ (x + m) / GDP \}$ is very useful in showing the trend and the composition of exports and imports (see Table 20.2). It also combines trade and economic policies, which are reflected by the GDP.

Pro-Poor Growth Strategies

In the 1980s, when the macroeconomic stabilization and structural adjustment policies were implemented as well as being hotly debated, the issue of growth with redistribution and poverty reduction was completely ignored. Yet the issue has always been at the heart of the development process. However, the World Development Report of 1990 (World Bank 1990) focused on poverty and argued for pro-poor development strategies. These involve building a (i) strong demand for the assets of those who are poor; (ii) assistance in developing the assets of the poor; and (iii) safety nets for those who are unable to be involved in market transactions. Hence, there was a great stress on poverty in the 1990s. This focus has shifted to the current development lending being based on poverty reduction and growth facilities and poverty reduction strategy papers (PRSP); they are still to be implemented. But it was the institution of the structural adjustment programmes that induced a high level of poverty.

Today, the strategy is to create an enabling environment that generates growth, to empower the poor and invest in them so that they can participate in the growth process. This implies that the government has to deepen and extend its economic reforms in order to improve the country's competitiveness and microeconomic efficiency. This effort should go hand in hand with significant improvement in governance and

judicial reforms, which are crucial in creating a more favourable investment climate as well as permitting individuals to carry out their social economic activities freely.

Table 20.2: Imports and Exports, 1980–2002
(in millions CFAF and as percentage of GDP)

Year	Imports (millions CFAF)	Exports (millions CFAF)	GDP (millions CFAF)	Imports/ GDP(%)	Exports/ GDP(%)	(M + X)/ GDP(%)
1980	337 608	290,615	1,410,000	23.9	20.6	44.5
1981	386,089	299,716	1,800,000	21.4	16.7	38.1
1982	394,581	348,231	2,170,000	18.2	16.1	34.3
1983	466,978	372,224	3,200,000	14.6	11.6	26.2
1984	484,432	381,334	3,840,000	12.6	9.9	22.5
1985	508,756	321,751	4,110,000	12.4	7.8	20.2
1986	590,439	271,639	3,920,000	15.1	6.9	22.0
1987	526,186	248,773	3,920,000	13.4	6.3	19.7
1988	378,727	275,118	3,640,000	10.4	7.6	18.0
1989	402,240	405,990	3,510,000	11.5	11.7	23.2
1990	381,150	545,106	3,350,000	11.4	16.3	27.7
1991	330,955	517,387	3,340,000	9.9	15.5	25.4
1992	307,793	487,132	3,200,000	9.6	15.2	24.8
1993	311,955	533,245	3,160,000	9.9	16.9	26.8
1994	601,500	825,200	3,420,000	17.6	24.1	41.7
1995	464,730	811,017	4,130,000	11.3	19.6	30.9
1996	572,617	821,608	4,570,000	12.5	17.9	30.4
1997	708,569	982,805	4,930,000	14.4	19.9	34.3
1998	874,614	1,084,146	5,240,000	16.7	20.7	37.4
1999	816,824	939,587	5,410,000	15.1	17.4	32.5
2000	910,677	1,092,198	5,830,000	16.6	18.7	35.3
2001	1,157,800	1,540,200	6,320,000	18.3	24.4	42.7
2002	1,044,200	1,203,700	6,870,000	15.2	17.5	32.7

Source: BEAC, *Etudes et Statistiques*, 1993, 2003; NIS, *Annuaire statistiques du Cameroun*, 1997, 2003; Central Statistics, *Cameroon in Figures 2000*.

Linkages

The number and strength of linkages in the developing economy are important. Hence, the agricultural sector is critical, as its development affects the largest number of sectors. The strength of the linkages is critical. The character of the link could be backward or forward linkage. Forward linkages basically facilitate the improvement and viability of other sectors and increase production from the supply side, while backward linkages with the demand for the product are increased from another sector. Backward linkages directly raise the price of outputs and stimulate higher production. Forward linkages reduce the price of one of the inputs of production, but in general there are many inputs. The overall effect is far more diffused given production information implications. It therefore matters very much whether a sector is stimulated through the lowering of its costs or rising of its prices given that there

are profits to be made. For instance, the price of cotton may rise because of the expansion of textile (clothing) industry, hence cotton becomes a more profitable venture and its production is stimulated. If the textile industry is promoted, this expands cotton production, which is being driven by the textile industry. Take the example of cotton production under SODECOTON. But who are involved in the textile industry in Cameroon? How are the profits obtained? Where do the profits go? How are poor producers treated? Who supplies them with inputs and who buys their output?

However, a leading sector does not necessarily have to be profitable, for example in the agricultural sector, road networks do spur other sectors that are profitable. Government's role is to undertake the development of intrinsically unprofitable activities, which generate profitable activities in all sectors including tourism, transportation, agriculture, and export. Coordination failure comes from complementarities. The failure shows itself as economic agents with complementary actions being unable to attain their desired goals because they are trapped in an undesirable equilibrium, given the constraints we have discussed.

Rural Agricultural Development and Poverty

In Cameroon the majority of the people live in rural areas and earn their livelihood from farming. More than 80 per cent of the population living in rural areas are poor, and about 50 per cent of the poor live in the most disadvantageous areas. Seventy per cent of the (rural) labour force produces insufficient food to feed the nation. This is in stark contrast with the industrialized countries, where less than 10 per cent of the labour force produces more than enough to feed the country. Poverty, being a rural phenomenon, means that by focusing on agriculture, the problem of rural poverty and hunger can be significantly addressed. The welfare of the rural people can be improved by intensifying and expanding the cultivated land area, significantly increasing the yield per unit land area and by sharply reducing losses after harvest. Through these sources more food could be available, with a reduction of real price of food.

The rural population must be able to adequately feed itself and raise family income by selling a surplus. This means that increasing farm output goes together with non-agricultural employment. Creating non-agricultural employment or off-farm opportunities could be in the rural areas or away from the rural areas. Evidence shows that poverty has been significantly reduced in countries that have sharply generated non-agricultural employment opportunities in rural areas (Ali and Elbadewi 1999). This means that some household members work part-time or full-time in non-agricultural employment. Employment is usually in supplying farm inputs, adding value to raw products of land or working in activities closely related to agriculture. This means improving farm technology and production methods, and above all transforming the primary products into manufactured products, thereby adding more value to the initial products.

Having such products would further generate more agricultural related-activities. Many of the activities may be in businesses not closely related to agriculture. As agriculture and labour productivity increases, more and more resources are shifted from agriculture to other sectors, with greater creation of employment activities. With increasing agricultural output and agricultural labour productivity as well as more value added to agricultural output, a higher proportion of agricultural output and resources would become inputs into the industrial/manufacturing sector. The cumulative effect would generate increases in income. Both the primary and secondary sectors could generate value-added activities in the tertiary sectors, if properly exploited and managed. Strengthening and enhancing the linkages of these sectors would be a viable way to promote economic growth alongside poverty eradication.

Most often the poor tend to escape poverty by migrating out of the rural areas. Rapid increases in urban population growth have been mainly owing to rural-to-urban migration, which tends to increase urban problems without reducing rural poverty; it is also the most productive rural labour force that migrates to urban areas. Rural migration increases urban problems, including inadequate potable water supply and social services provision, and insufficient removal of garbage and sewage. Yet urbanization can be slowed by making rural areas more attractive. This has long been recognized, but very little has been done in Cameroon to solve these problems. Making rural areas more attractive seems to be the most viable solution; that is, improving the agricultural sector, transforming agricultural products, and creating off-farm employment opportunities, developing rural financial institutions and creating other facilitating infrastructures and institutions. These go together with rural road infrastructure, communication and transportation development as well as rural markets. Rural (agricultural) development links agricultural and food markets to national and international markets. Undertaking investment in human capital and social services – education, health, and safe water supply – enhances greater productivity in general.

Physical capital and labour are probably the two main household types of endowments that strongly determine poverty. Household members possess human capital, and the effective utilization of their human capital depends on other factors such as investment in their human capital, and other characteristics of the members of the household. Human capital tends to be the main asset of the poor, and education tends also to be the main variable reflecting human capital. Human capital here includes education, experience, health and nutrition, with some variables reinforcing human capital accumulation and effectiveness.

Anti-poverty Strategies

Many more Cameroonians live in rural areas than in urban areas. A further analysis of poverty incidence and contribution indicates that rural areas have a higher poverty incidence irrespective of age group. The export and food crop farmers make up more than 80 per cent of the rural poor irrespective of the region. The implication is that the best strategy for combating poverty could be further considered in two parts. The first part of this strategy requires making best use of the assets, which

the poor possess in abundance, of labour as human capital. Hence the first part would concern labour-intensive policies through market orientation, institutional, infrastructure and technological development. But this must be accompanied by strong human capital investment/development.

The second part of the strategy ensures that the poor have easy access to a minimum level of social services such as health, education, nutrition and sanitation, and other resources. The outcome of this second part would be improving productivity through improved human resources and providing public goods and services. These two parts complement and reinforce each other and as such should be implemented together. From the analysis it is apparent that there is a close link between poverty, particularly rural poverty, and agriculture, which in most cases is carried out in the rural areas. Hence rural people must be first be empowered.

More than 70 per cent of Cameroon's labour is involved in agriculture. In addition to the involvement of agro-industrial institutions, including the CDC, SOCAPALM, PALMOIL and Del-Monte, most of the agricultural activity is carried out by small-scale farmers. Agricultural activities are characterized by low productivity, the use of rudimentary tools and excess labour, which tends to generate falling marginal productivity. To render the agricultural sector more productive, there is greater need for improvement in crop yield as well as in different agricultural inputs such as land, labour, capital and more extensive use of other inputs like fertilizers and pesticides, and an increase in extensions services. This can, in the short run, bring about increased productivity and high income earning, such that in the long run there is a need for cultivating larger parcels of land with less labour. Consequently, the desired growth policy could be one that recognizes that most individuals would earn their income from non-agricultural activities as economic growth takes place. As a result, excess labour would be moved from the agricultural sector to other sectors, and also other non-agricultural sectors such as crafts and furniture making, which can be developed in the rural areas. For the complete integration of excess labour into other sectors, a minimum level of education, health and sanitation is needed. This can be provided within the second part of this two-part strategy.

Any meaningful strategy that might be implemented to reduce poverty must, therefore, ensure equity and reduce vulnerability. Hence this strategy would require:

- Policies and programmes that promote broad-based growth and economic opportunities. These policies should encourage human development and physical infrastructure investment, which would consequently create employment opportunities in both public and private sectors and increase productivity; accordingly there should be a rise in productivity and income, both very much needed by the poor to move them out of poverty.
- Policies that ensure that the poor are not only moved out of poverty but also stay completely out of poverty, reducing vulnerability and ensuring increased sustainability of living standards. To this end measures ensuring fair and equitable access to social services and necessary resources should be implemented. Ensuring equity between people, gender, regions/areas and

tribes through their empowerment and participation seems the best way; this would ensure balanced regional development, national integration and targeting of remote (rural) areas for development. To avoid conflicts, it is important that no region is neglected.

- Special care needs to be taken to reduce the vulnerability of the poor to unforeseen events such as sickness, poor harvests, loss of income earners, etc, which are capable of dragging some households back to poverty. Hence, there is a need for strengthening and supporting formal and informal safety net mechanisms, including social capital and social inclusion. These are important to successful agricultural development, which can generate broad-based economic growth, since much of the labour force is in the agricultural sector. A broad-based economic growth strategy gives people, particularly the poor, the means to improve their standard of living, especially the quality of their diets. Although as people's incomes increase they tend to devote smaller and smaller proportion of such income to food, they also tend to adjust their diet, often by including more vegetables, fruits and animal protein.

To promote and enhance this type of growth, investment in agriculture and agricultural research are fundamental in changing the domestic marginal rate of transformation so as to create comparative advantage for farming. This is important because Cameroon has options that are not mutually exclusive, although some options are better than others. That is, given its potentials, Cameroon can efficiently produce its own food with surplus for export.

Investment in agriculture, agricultural research and technological improvement is vital in boosting agricultural productivity, increasing returns to farmers and improving the earnings of farm labour. But this must go together, with investment in rural infrastructure, social services and institutional strengthening, which can also create off-farm employment, and generate a broad-based growth with poverty eradication. A broad-based growth strategy can easily eliminate poverty as the economy grows. In fact, these are anti-poverty strategies, which should go a long way to meeting future food needs at affordable prices, and above all creating broad-based economic growth. Agriculture accounts for the largest share of income and employment, so greater investment is required in this sector than in any other for sustainable economic development.

Some Basic Constraints

Certain factors contribute to the loss of productivity and slowing down in investment and growth. Transportation infrastructure, in terms of road and railway networks, is still inadequate and in poor condition. The road network has to be greatly extended to completely cover the rural areas. In 2000 the road network (Central Statistics 2000) consisted of only 311,000 km of feeder roads (unclassified or untarred) and 14,000 km of major roads, including 4,000 km of paved roads, with no improvement, no significant maintenance and no increase in quantity and quality. The network needs to be extended and well-maintained. The government started the privatization

and subcontracting of road maintenance in the mid-1990s, so that the private sector could take over maintenance of the road network. But the problem of quality control must be fully addressed. Besides making the system transparent, the government could go further to involve the road engineering branch of the armed forces in the construction and maintenance of the road network. In the past they have proved to be efficient. They could do much better if their capacity is improved and their effort is enhanced.

Cameroon's 1,200 km railway network is really limited, and at the same time most of the system's equipment is worn out or obsolete, requiring replacement with additional investment. The railway network possesses enormous potential for moving goods and persons, particularly between the southern and northern parts of the country. Resources need to be allocated to this sector more efficiently. Also Cameroon has five main ports, with Douala catering for over 80 per cent of external trade. The natural ports of Limbe, Tiko and Kribi could take a greater volume of trade, as the Wouri Channel continues to narrow and causes reductions in volume of traffic in Douala. Then, Cameroon officially has fifteen airfields and airports, including three international airports. Most of these could be closed and the resources reallocated to other networks. Above all, improving the management of all these transportation systems is crucial as they will greatly facilitate the smooth and efficient functioning of the factors of production.

A second consideration is the government's heavy intervention in the economy, which has made the public sector the largest employer of labour, with its largest expenditure item the payment of wages and salaries. Hence, as the economy collapsed, the government was saddled with huge fiscal deficits that were largely structural. Such expenditures had to be drastically reduced as there was no way to raise fiscal revenues quickly enough to cover the deficits. Drastic cuts were made, starting with investment components, from CFAF 213.3 billion in 1986 to CFAF 34 billion in 1987. Then current expenditures were reduced in the 1990s, with sharp cuts in civil servants' salaries and amenities. Furthermore, as the government had liquidity constraints, it failed to fulfil its outstanding financial obligations to civil servants and to the suppliers of goods and services. The sharp budgetary cuts including salary reductions resulted in demoralized and poorly motivated workers, and the fall in income in turn led to reduced consumption and productive activities.

The fall in world prices of Cameroon's major exports resulted in lower output and producer income. The loss of some advantages by factors of production and the poor transport system led to the breakdown of some links in the chain and contributed to the slowdown in investment and growth. This tended to add cumulative negative effects, such as declining productivity and a reduced incentive to invest. Addressing these constraints/breakdowns should generate huge gains for the economy, given the country's continuing enormous resource base.

To boost morale and increase productivity, some type of rationalization with in-built transparency and efficiency measures should be carried out in the public service. In the late 1990s the government started reducing the public service, but the

salaries of those remaining need to be raised and regularized means of promotion established. Public enterprises are also in the process of being trimmed; this process needs to be carried out transparently and with care, taking into consideration the national interest. Above all, besides rightly setting the national priorities, expenditures must be allowed to reach their targets. For example, if an expenditure head is earmarked for school buildings, then the stated amount allocated should really go to the construction of the buildings. This highlights the governance problem. A system of reward and punishment or sanction should be well-established, with persons being rewarded for their good performance and punished or sanctioned for wrongdoing or non-action. Developing good governance, however, is a process requiring the building and strengthening of the right institutions.

Cameroon's Imperatives

For Cameroon to succeed in reducing or eradicating poverty and promoting sustainable economic growth actions must be undertaken across all sectors and institutions. Firm commitments and forceful policies with institutional reforms are required to create and generate the conditions and positive environment for sustainable development. All Cameroonians in different groups must be involved. A general mobilization is necessary to improve institutional performance, strengthen local institutions and reduce regional and gender inequalities.

Cameroon's relatively low income level does not reflect the enormous resources it possesses. Its resources could be managed appropriately and rationally to promote long-run economic growth. An examination of the different sectors, for instance, as seen in the education and health sector, reveals much inefficiency but also the corollary that a more efficient use of resources would release more resources into production and increase productive capacity. A key issue is the governance problem, which tends to misallocate resources as well as siphon resources away from Cameroon's economy. With the appropriate policies in place, investment incentives could be increased, with increased mobilization of domestic savings and external capital inflows being better utilized. In fact, much investment could be encouraged in the tangibles and intangibles, including technology.

Cameroon's economy can easily be set on a sustainable growth path with the right policies, given the human capital produced by previous investment, which is a good basis or foundation for tremendous growth in productivity. This is partly because the flexibility of educational output (human capital) would permit the more effective utilization of the physical capital and technology. The economic history of countries such as Japan (Nihon no Seicho and Kyoiku 1962) has shown that in trying to catch up there was often educational investment that was initially not very productive but later became crucial for rapid and successful socio-economic development. It is likely that education should also be the basis for the transformation of people's value system while the society enhances its skills and knowledge. These transformations with institutional and organizational reforms are crucial for the country's economic development.

This analysis demonstrates the importance of the relationship between investment in physical capital and non-tangible capital such as in education at various levels or stages of the development process. Developing appropriate technology is important. This calls for investment in innovative and adaptive research. To this end, there is a need to step up research in exploiting the existing scientific and technological knowledge and adaptation to the environment and the country's positive realities. In all, the role of education becomes paramount.

An educated and skilled workforce can easily exploit the great opportunities in technology as well as adapting technologies to the socio-economic environments of the country or economy. This would include institutional innovations in training and education systems, and labour management as well as the market structure. Such strategy rapidly converged the economy of South Korea and other high-performing East Asia economies up towards the level of advanced economies (Lawrence and Thirtle 2000). Thus the role of technology is a key to achieving sustainable development.

Stress must be put on (i) the appropriate and effective provision of public goods and services, such as roads, ports and railways, telecommunication and infrastructure for the proper and efficient transportation of goods and persons, and the cohesiveness of the country; (ii) the appropriate laws or rules and regulations, which are crucial for efficient transactions in goods and services; (iii) the proper protection of persons and property, which is necessary for the carrying out of people's daily activities; (iv) strong support for agricultural research and extension systems; (v) proper application of research results and appropriate adaptive research; (vi) proper delivery of social services; (vii) the proper functioning of the financial system. The low level of economic development means that sectors such as infrastructure and institutions would require considerably more effort to develop in order to make them more effective. That is, there should be a deliberate commitment to allocate a high share of the budget to infrastructure and human and institutional development.

References

- African Development Bank (ADB), 2004, *Africa in the Global Trading System*, African Development Report 2004, Oxford: Oxford University Press.
- Ali, Ali A. and Ibrahim Elbadawi, 1999, *Inequality and the Dynamics of Poverty and Growth*, Working Paper No. 32, Harvard: Center for International Development.
- Banque des Etats de l'Afrique Centrale (BEAC), 2000, *Rapport d'activité exercice 1999–2000*, Yaoundé: BEAC.
- Banque des Etats de l'Afrique Centrale (BEAC), 2005a, *Rapport d'activité exercice 2002–2003*, Yaoundé: BEAC.
- Banque des Etats de l'Afrique Centrale (BEAC), 2005b, *Situation Economique, Financière et Monétaire des Etats Membres de la Communauté Economique et Monétaire de l'Afrique Centrale en 2004 et Perspectives pour 2005*, Yaoundé: BEAC.
- Barro, Robert, 1997, *Determinants of Economic Growth: A Cross-Country Empirical Study*, Cambridge, MA: MIT Press.
- Central Statistics, 1998–2002, *Cameroon in Figures*, Yaoundé.

- Commission Economique pour l'Afrique (CEA), 2005, *Les économies de l'Afrique Centrale*, Centre de développement sous-régional pour l'Afrique Centrale, Addis Ababa.
- Devarajan Shantayanan, David R. Dollar and Torgny Holmgren, 2001, *Aid and Reform in Africa*, Washington, DC: World Bank.
- Fischer, Stanley, 1993, 'The Role of Macroeconomic Factors in Growth', *Journal of Monetary Economics*, Vol. 32, pp. 485–512.
- Lawrence, Peter and Colin Thirtle, eds, 2001, *Africa and Asia in Comparative Economic Perspective*, London: Palgrave.
- Lipton, Michael and Martin Ravallion, 1995, 'Poverty and Policy'. In: J. Behrman and T.N. Srinivasan, eds, *Handbook of Development Economics*, vol. 3, Amsterdam: Elsevier Science Publishers B.V.
- Lynch, Sarah, 1991, *Income Distribution, Poverty and Consumer Preference in Cameroon*, Washington, DC: Cornell Food and Nutritional Policy Program.
- Nihon no Seicho and Kyoiku, 1962, *Economic Growth and Education in Japan*, Tokyo: Ministry of Education.
- Sala-i-Martin, Xavier, 1997, *I Just Ran Four Million Regressions*, NBER Working Paper Series No. 6252, Cambridge, MA: NBER.



CODESRIA Book Series

This book contains a well thought out and meticulous work that engenders a plan for pushing Cameroon towards a sustainable economy....This work will be of interest to those interested in better understanding development process in Cameroon characterized by a paradox that the authors formulated as 'with so much to be done needing many resources, yet much resources remain idle, unemployed and under-employed'. I congratulate the team and heartedly recommend this book to decision makers, policy analysts, students interested in Africa's development process and that of Cameroon in particular.

Dr Abdoulaye Niang, author of *Towards a Viable and Credible Development in Africa*
and Team Leader, Economic Commission for Africa, Addis Ababa, Ethiopia

The book is written to enhance and direct policy formulation and implementation; the chapters are properly rooted in theoretical/conceptual foundation and empirical analysis. They cut across the real, financial and social sectors of the Cameroon economy. ...The chapters not only analyze policies but also proffer solutions to the various economic and social problems of the economy. The book will serve as a research reference for both academics and students in various disciplines of the social sciences.

Professor Sherifdeen Tella
Dean Faculty of Social Science and Management,
Olabisi Onabanjo University, Ogun State, Nigeria

Within a solid theoretical framework, the authors critically analyze the different challenges that a country like Cameroon faces in its development effort. They bring out the crucially important role of the government in contributing to create a broad-based development pattern particularly in creating the necessary infrastructure, raising the productivity level of the economy, providing and delivering the appropriate social services. Underscoring the role of institutions in production, distribution and consumption of goods and services in Cameroon's economy, the book offers concrete solutions in terms of infrastructure, human and institutional development....Such treatment of development issues is exceptional given the scientific and intellectual rigor that had gone into it. Indeed, this is an excellent book for students, academics, policy makers, development practitioners, private sector operators, representatives of civil society organizations, and even the general reader..

Professor John C. Anyanwu, Chief Research Economist,
African Development Bank (ADB), Tunisia

Developing a Sustainable Economy in Cameroon is a major analytical undertaking in the neoclassical tradition. Using rigorous analytical tools and assuming good management and optimal use of the country's abundant natural and human resources, Professor Amin and his colleagues set out to show the optimal path which Cameroon ought to have followed to attain sustainable development. I highly recommend the book for all interested in economic development.

Dr Joseph Ntangsi, Representative,
KFW German Development Bank, Cameroon.

